



# International Abstract of Surgery

SUPPLEMENTARY TO

Surgery, Gynecology and Obstetrics

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JANUARY, 1927

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## EDITOR'S COMMENT

THE papers of Lockhart Mummery (p. 26) and of Cuneo and Bloch (p. 26) upon cancer of the rectum and of Abel (p. 17) upon cancer of the œsophagus emphasize again the constantly improved results that are being obtained in the surgical treatment of carcinoma of the gastro intestinal tract. As has been so often emphasized, cancer of the gastro intestinal tract lends itself to surgical treatment because of its gradual development and its tendency to remain localized during the early stages of the disease. Abel has pointed out again the vital importance of making an early diagnosis. Unfortunately in these situations in which early recognition is easiest—the upper and lower ends of the alimentary canal—the technical difficulties of operative removal are greatest. That Lockhart Mummery has been able to operate upon 100 cases of rectal cancer with a mortality of only 3 per cent indicates the surgical possibilities of a well conceived and carefully executed plan of operative treatment.

Cole's discussion of the role of the sulcus angularis with its excess of mucosa in the etiology of gastric ulcer (p. 21) emphasizes the fact that the influences which have been considered by various pathologists as causative factors in the production of ulcer are concentrated upon this area and that the development of an ulcer may be due to the summation of these influences upon this definitely localized portion of the stomach. Higgins and Adams' papers on duodenal ileus (p. 23) indicate the increasing attention and recognition that is being devoted to this less common cause of gastro intestinal pathology.

The constantly increasing interest that is being

manifested by American surgeons in the subject of bone tumors is undoubtedly due in part to the efficient investigation of bone sarcoma initiated a few years ago by Codman and his associates. In this month's issue reviews of two papers on bone tumors by Bloodgood (p. 47) and Meyerding (p. 49) emphasize certain aspects of the important subject. Bloodgood stresses the importance of avoiding the diagnosis of malignancy in cases of benign cyst of benign giant cell tumor and of chondroma and of exploring central sarcomata only if at all with the cautery. Meyerding emphasizes again the value of the roentgenogram in the diagnosis and the helpful effect of radiation in the palliative treatment of endothelioma. Detailed methods of treating different types of benign tumors are discussed in both papers.

A number of other important papers on subjects of varied interest which are abstracted in this month's issue can be only mentioned. The reports of Bancroft and Rogers and of Beck and Powers (p. 59) on the results of the tannic acid treatment of burns confirm the successful clinical results that have already been reported by Davidson and others. Henderson's description of an operation for correcting habitual dislocation of the shoulder (p. 53) will be noted with interest by those who have attempted to correct this troublesome condition. Esser's method of swinging large pedicled flaps with slender pedicles containing an artery, nerves and lymphatics only (p. 60) a method which avoids the necessity of dividing the pedicle, should prove of great value to the plastic surgeon in selected cases.

# INTERNATIONAL ABSTRACT OF SURGERY

JANUARY, 1927

## ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

### HEAD

**Seifert** The Route of Infection in Postoperative Purulent Parotitis (Infektionsweg bei postoperativer eitriger Parotitis) 50 Tag d deutsch Ges f Chir Berlin, 1926

As there is still doubt as to the route of infection in postoperative parotitis, the author studied sixty five patients with the condition. All of them as long as they were severely ill, showed a preponderance of staphylococci in the mouth. The condition of the teeth also seemed to be of importance but other factors must be of influence. The investigations have not yet been completed. It is possible that a study of the mucin will solve the problem. At any rate, the findings to date indicate that the parotid gland becomes infected from the mouth and this fact suggests the prophylaxis. STETINER (Z)

**Stoccada F** The Pathogenesis of Acute Postoperative Parotitis (A proposito della patogenesi della parotite acuta postoperatoria) Arch ital di chir 1926 xv 537

The prognosis of acute parotitis occurring as a postoperative complication is very unfavorable as the mortality, according to statistics recently collected is 30 per cent.

In the author's opinion no time should be lost in medical treatment surgical incision should be made as soon as the suppuration becomes manifest.

Stoccada reports a case of his own in which the acute parotitis began on the sixth day after an appendectomy. He incised on the second day after the beginning of the suppuration and the patient made an uneventful recovery. The pus showed a pure culture of staphylococcus aureus.

In connection with this case Stoccada discusses the pathogenesis of the condition. According to one theory, the infection reaches the parotid gland from the mouth, while according to another it is carried to the gland by the blood stream. The author calls attention to the fact that there are a number of

lymph glands in the bed of the parotid and maintains that in his case at least, the infection was carried by the lymph circulation to these glands. The patient had dental caries and chronic pharyngitis due to the excessive use of tobacco. Stoccada believes that instead of being called 'acute postoperative parotitis' the condition should be termed 'postoperative phlegmon of the bed of the parotid' because the lymph glands in the bed of the gland are affected first and the infection extends to the parotid by contiguity. AUDREY G MORGAN M D

**Moore P** Pre Operative Treatment with Arsenic Considered with Regard to the End Result in Two Cases of Cancer of the Lip (Le traitement arsenical pre opératoire a propos du résultat éloigné de deux cancers labiaux) Bull et mém Soc nat de chir 1926 lvi 169

The author reports two cases of quite advanced cancer of the lower lip in which radical operation was followed by a cure lasting two and three years respectively.

He states that since the adoption of the practice of giving three injections of 1 to 1.5 gr of neosalvarsan during the week preceding the operation, complications due to infection have become rare and the risk of operation has been greatly decreased. This preliminary treatment has now been extended to almost all operations on the digestive tract. Its beneficial influence is ascribed to the action of the neosalvarsan on the group of spirilla.

In the discussion of this report, BRECHOT and LENORMANT stated that neosalvarsan was found greatly to favor the healing of war wounds.

ALBERT F DE GROOT M D

### EYE

**Peck C H** Pulsating Exophthalmos Ligation of Common Carotid Ann Surg 1926, lxxviii, 15

The author reports a case of pulsating exophthalmos following an injury. There was no change in

the fundus no loss of vision and no diminution in the visual field. A year after the injury partial occlusion followed by complete ligation of the carotid artery was done to decrease the danger of cerebral accident. The subjective bruit ceased after the partial occlusion but a low pitched murmur still persisted after the complete ligation. The exophthalmos has now disappeared and the patient is in very good condition.

VIRGIL WESCOTT M.D.

**Robinson C. A. Radium Therapy in Diseases of the Eye and Adnexa** *Arch Ophth* 1926 lv 328

The author has used radium with remarkable success in the treatment of angiomas, papillomata, epidermoid carcinomata, lymphomata, peritheliomata, intra-ocular tumors (gloma and melanoma), orbital tumors (sarcoma and angio sarcoma) and vernal conjunctivitis. He has seen two cases of cataract following the use of large doses of radium. In one that of a diabetic patient a secondary glaucoma developed and enucleation of the eye became necessary. He draws the following conclusions:

1. Radium irradiation is the treatment of choice for angiomas, vernal conjunctivitis, epidermoid carcinoma of the eyelids and early carcinoma of the bulb.

2. It is indicated as a postoperative measure in cases of primary intra-ocular tumors and should be first choice for primary orbital tumors.

3. To determine the status of radium in the treatment of diseases of the eye and its adnexa careful methods of irradiation and closer co-operation between the radiologist and ophthalmologist are necessary.

VIRGIL WESCOTT M.D.

**West J. M. The Intranasal Lachrymal Sac Operation Its Advantages and Its Results** *Arch Ophth* 1926 lv 351

The treatment of dacryostenosis has made little progress. The sac is irrigated, the duct is probed and eventually the sac and in some clinics the lachrymal gland are removed externally. Under the present regime fistula and phlegmon have a very poor prognosis even when the treatment is long continued. Attempts have been made to establish a permanent connection between the conjunctival sac and the nose through an external incision intranasally from the maxillary antrum and through the mouth. The high incidence of failure of Toti's operation of dacryocystorhinostomy must be due to the external incision which disturbs the relations of the canaliculi and internal ligament. An intranasal operation is applicable to all types of cases and is curative in 90 per cent.

The author has done the intranasal operation 1600 times. Local anesthesia is used. The nasal mucous membrane is incised and a large flap turned aside over the inferior turbinate to expose the bony wall from the pyriform apparatus to the posterior boundary of the lachrymal fossa. The sac is then exposed by removing this wall with chisel. The nasal end of the sac may be incised or the sac re-

moved entirely. The mucous membrane is then replaced and the nose probed. The artificial opening rarely closes as it becomes lined by epithelium from the canaliculi. After this procedure pathogenic bacteria leave the conjunctival sac within one or two days whereas after external removal of the sac pneumococci may remain for several years.

The advantages of the intranasal operation are summarized as follows:

1. The internal operation is more reliable as a cure for suppuration of the lachrymal sac than the external procedure.

2. It re-establishes the physiological function of the lachrymal apparatus so that not only a dacryocystitis, a lachrymal fistula or a phlegmon is cured but subsequently the tears drain off into the nose and the troublesome epiphora is avoided. The re-establishment of drainage removes simple epiphora of nasal duct origin.

3. The re-establishment of drainage from the eye into the nose causes the disappearance of the pathogenic bacteria from the conjunctiva which is very important when future intrabulbar operations are indicated.

4. A prolonged and usually painful and unsuccessful treatment with probes is avoided.

5. Removal of the lachrymal glands is rendered unnecessary.

6. In external incision or curettage necessitating an external bandage and other disadvantages is avoided.

7. In cases of fistula and phlegmon the patient is spared the troublesome and painful changing of dressings which is necessary after the external incision.

8. The entire treatment is usually completed in about a week.

9. The operation is not trying upon the patient and is performed under local anesthesia in the cases of children as well as those of adults. Usually the day following the operation there is scarcely any swelling of the face and bandaging of the eye is unnecessary.

SAMUEL A. DILL M.D.

**Duke Elder W. S. The Pathological Action of Light upon the Eye. II. The Action upon the Lens. Theory of the Genesis of Cataract** *Lancet* 1926 ccc 1188

Regardless of great speculation as to the cause of cataract it is only in recent years that the fundamental aspects of this problem have been approached. It now seems that with certain exceptions the essential cause may be traced to the incidence of radiant energy directly on the lens itself. All radiations transfer energy to the substances which absorb them the longer waves by increasing molecular movement with primarily thermal effects and the short waves inducing photochemical and photo-electrical effects. Hence in the last analysis the effect on the lens is dependent upon the absorption of radiant energy. This energy must first traverse the cornea and aqueous, and as the former is the

more absorbent, the nature of the radiations to which the lens is exposed is determined by it. The lens is reached by incident radiation of wave lengths of the order of  $10^{10}$  Angstrom units, those in the region of 20,000 to 3,000 visibles, long ultraviolet rays, and those of the order of an Angstrom unit (X rays, gamma rays).

Having reached the lens the energy represented by them may be absorbed by the lens, causing changes therein, or transmitted according to the laws of refraction without affecting the lens or dispersed by the particulate structures in the lens, its path being thereby changed. Again it may induce fluorescence, or a small fraction may be reflected from the surfaces.

Being interested only in the absorbed portion, we are concerned especially with the rays between 20,000 and 3,000 since the spectra of all ordinary sources lie between these limits. Rays between 14,000 and 11,000 and between 4,000 and 3,700 will produce potentially a pathological thermal effect, while those between 3,700 and 3,000 have an abiotic and mild thermal effect. From the point of view of pathology, the concentration of incident radiant energy in its passage through the lens is of primary importance. In this there are two opposing factors: the concentrating effect due to refraction by the optical system and the dissipating effect. The latter is due to specific absorption by the media: loss by reflection, dispersion, and spherical and chromatic aberration. The total density of energy in the lens depends further upon the size of the pupillary aperture and the size of the illuminating source. From small sources of light there is no serious concentration in the lens, but from large sources such as snow fields, the desert, or molten glass or metal, the concentration is enormous. On the capsule, thermal and abiotic effects are manifested by swelling and proliferation of the cells, eosinophilia, or basophilic in the cells, or nuclear pyknosis.

Opacity of the lens substance is essentially a coagulation of the four proteins: (1) albuminoid in the nucleus and two water soluble proteins in the cortex, (2) alpha crystalline in the outer cortex, (3) beta crystalline in the inner cortex and (4) albumin.

Though the lens is a sluggish tissue it must possess a respiratory mechanism in order to live and maintain its transparency. This is an auto oxidation system wherein glutathione acts as a hydrogen donor which reduces the hydrogen acceptors and the beta crystalline acts as a thermostable residue which reduces the glutathione after it has been oxidized. In the lens the glutathione content is large but is lowered after exposure to heat or ultraviolet rays, the metabolic efficiency of the lens also being then decreased.

Lipoid substance may have some effect on the auto oxidative system by increasing the rate of oxidation. Protein may be changed from the colloidal to the particulate type by precipitation or coagulation but as the former is a reversible process it is not important in the formation of cataract. The

latter, however, is highly important as it is non reversible and by means of it the protein is chemically altered. It consists of denaturation and agglutination and appears to be brought about by any form of radiant energy (heat) and by mechanical strain.

In the incidence of coagulation hydrogen ions and salt concentration play a part. The reducing power of the lens is very sensitive to changes in reaction, disappearing if the medium is more than pH 7.0. Salt concentration has a sensitizing effect on coagulation by light, but salts are of importance chiefly in determining osmotic changes through the semipermeable membrane (lens capsule) separating the two greatly different media. When the normal mechanism is deranged, aqueous will enter if the difference between the osmotic pressures is increased (diabetes) if the internal tension of the lens is lowered (old age) or the intra-ocular pressure is increased (absolute glaucoma), and if the vitality of the semipermeable membrane is lowered (debility, nutritional deficiency under the action of light), or its continuity is broken as in trauma.

Experimentally cataract is produced by electrical oscillations, isolated infrared heat waves, visible light, ultraviolet rays, radium, intra ocular injections of hypotonic solutions or sensitizers (haematoporphyrin) upon exposure to light. Clinically, cataract may follow the passage of an electric current through or near the eye, as in short circuits and lightning flashes, and in such cases is due largely to an electrochemical reaction and concussion. Occupational cataract due largely to heat is seen in iron workers and occurs most often at the posterior pole where the radiant energy is most concentrated.

Senile cataract from long ultraviolet rays is probably due to the action of the radiant energy on the oxidation system of the lens and the stability of its colloid system. Gamma rays rarely cause cataract, presumably because of the rarity of sufficient exposure to them. In diabetes two forms of cataract are seen, the common senile type and the rare type characteristic of that disease. The high incidence and early occurrence of senile cataract in diabetes is due to the fact that both sugar and acetone sensitize proteins to the denaturing action of light and in addition, the diabetic state subjects the lens to an osmotic deforming force and abnormal fluid traffic. In cholera, the causes of cataract are probably osmotic changes. In the formation of complicated cataracts the determining factors are probably malnutrition and the influence of toxins acting directly on the lens or acting indirectly by altering the permeability of the capsule.

In conclusion the theory is advanced that the primary cause of cataract in general is probably the direct action of incident radiant energy on the lens which increases the lability of its colloidal system deranges the auto oxidation system upon which its metabolism depends and thereby renders its proteins more prone to coagulation by changes in the hydrogen ion concentration, osmotic changes due to



the action of radiant energy on the lens capsule general metabolic disturbances and continuous photosensitization GEORGE R McVULFIE M D

**Duke Elder W S The Pathological Action of Light upon the Eye III Action upon the Retina** *Lancet* 1926 cxxi 16

Infra red light is practically all absorbed before it reaches the retina Light of 7 000 Angstrom unit wave length at the beginning of the visible red is absorbed very little 94 per cent of the incident energy reaching the retina From this point of the spectrum to 4 000 (ultraviolet) all of the incident energy is transmitted The range is greater in childhood The retina is reached by waves between 4 000 and 7 000 and by some of those from 4 000 to 3 200 and from 7 000 to 12 000 The intensity is reduced by absorption of the media and dissipation but it is concentrated on the retina by refraction through the optical system

Pathological effects of light are due to over stimulation thermal action or abiotic action There is no evidence that they can be produced by over stimulation by visible light rays Most of the energy incident on the retina is absorbed by the pigment layers and degraded into heat In the disk thermal lesions may produce thrombosis of the central vessels Elsewhere they produce sharply defined areas of choroidal congestion The effect is most marked in the pigment layers and less marked in the rods and cones and choriocapillaris Other layers are affected only when the former are entirely disintegrated The entire retina may be fixed by heat coagulation or entirely disorganized Abiotic effects reported by various observers occur as chromatolysis of the ganglion layer and loss of chromatin in the nuclear layers As would be expected these changes occur more easily in aphakic eyes

Sun blindness is a purely thermal effect It is associated with a reduction of visual acuity to 0/12 or 6/60 a diffuse cloud before the eye a demonstrable scotoma and often metamorphopsia The scotoma is central and sometimes absolute It usually contracts over a period of weeks Ophthalmoscopic examination reveals a red spot at the macula and sometimes edema and hemorrhages Rare complications are obstruction of the central vessels hemorrhagic retinitis retrobulbar neuritis and optic atrophy

Any intense illumination may produce subjective symptoms but acute retinal damage is rare Arc lights have produced scotomata and contraction of the visual field as well as edema pallor of the disk and macular changes Flashes from short circuits and lightning flashes have had similar effects

SAMUEL A DUKER M D

**Jameson P C The Surgical Treatment of Wounds of the Cornea with a Prolapsed Iris** *Arch Ophthalm* 1926 lv 465

Jameson describes two surgical procedures for the treatment of wounds of the cornea with prolapse of

the iris The first is the formation of a double triangular conjunctival flap which makes even pressure over the corneal wound and adjacent cornea does not indent the wound margins does not slip does not sacrifice tissue and does not bring sutures in contact with the cornea A vertical incision is made through the conjunctiva from the top of the vertical meridian of the cornea to the fornix Two other incisions are then made from its lower end in either direction along the limbus as far as necessary The two flaps are dissected free and the apex of one is fixed at the inferior extremity of its fellow by two or three sutures through the episcleral tissue The apex of the other is then fixed on the opposite side in the same way to form a superficial supporting flap The superficial flap pulls out in about three days and the base flap a few days later both then returning to their original anatomical position

The second procedure described is the replacement of the prolapsed iris After sterilization of the iris with 1/2 to 1 per cent silver nitrate and irrigation a counter incision is made some distance from the site of corneal injury A fine blunt probe bent to a hook form is then introduced through this incision and hooked around the prolapse and by traction from within and external pressure with a spatula the prolapse is replaced The prolapse can often be replaced in this manner even after an interval of from three to five days

SAMUEL A DUKER M D

**Davenport R C The After Results of Corneal Scleral Trephining for Glaucoma** *Brit J Ophthalm* 1926 v 4 8

Davenport reviews the records of 405 cases in which a trephine operation was performed in the period between 1919 and 1933

Of 154 patients whose vision was 6/6 to 6/1 before the operation 124 had the same vision at the last record In twenty three vision was 6/18 to 6/60 and in seven less than 6/60

In 104 cases in which vision was 6/18 to 6/60 originally it was ultimately 6/6 to 6/12 in thirty one 6/18 to 6/60 in fifty seven and less than 6/60 in sixteen

In 147 in which vision was 6/60 before the operation it was ultimately 6/6 to 6/12 in twenty 6/18 to 6/60 in twenty six and less than 6/60 in 101

Vitreous was lost in seven cases in three of which enucleation was done Loss of the disk in the eye was reported three times but occurred oftener it never produced any ill effects

Eight patients over 60 years of age had intraocular hemorrhages with variable reduction of vision

Iris prolapse occurred in two cases in which no iridectomy was done In one of these a late infection developed Choroidal detachment was noted in ten cases but always subsided rapidly

Quiet iritis seems to occur in practically all cases especially if atropin is not used but usually it has little or no effect on vision Acute infection followed

the operation in two cases, and in one of these enucleation was done. There were fourteen cases of late infection occurring after from two months to seven years. Two eyes were eviscerated and six had vision of 6/12 to 6/18 when the infection subsided.

In 7 cases other operations were necessitated by increasing tension. The results are less favorable in old patients than in younger ones.

Cataract is not caused by trephining. In four cases in which cataract extraction was done after trephining the visual results were poor.

SAMUEL A. DURR, M.D.

**Licskó, A.** The Removal of Cataract with the Capsule. *Brit J Ophth* 1926 x 485

In using a capsule forceps in the usual extra capsular extraction the author noted that sometimes the capsule was not torn but the lens was dislocated. This was due to the use of a dull capsule forceps. Accordingly, Licskó had a Shulek forceps made with blunt teeth. In his operation the usual preparation is given and the eye is fixed by a suture through the superior rectus. The incision is made longer than one third of the cornea, and a large conjunctival flap is formed and folded over the cornea. An iridectomy is then performed, the lens capsule is seized with the dull forceps, slightly above the equator, and lateral movements are made to rupture the zonule and draw the lens into the wound. At the same time sufficient pressure is exerted from below upward with a Shulek annular expressor to allow the operator to "feel the elasticity of the vitreous." After the removal of the lens, the usual toilet of the eye is completed. Both eyes are kept bandaged for one day and the eye operated upon is bandaged for five days.

Licskó has performed 204 operations of this type. A successful result was obtained at first in 30 per cent and later in 50 per cent. In the others the ordinary capsulotomy operation was carried out because the loss of vitreous was feared after the new technique had been tried. Vitreous was lost in only one case and in this instance the loss occurred while the section was being made in a complicated cataract. Two other patients squeezed vitreous out after the operation and one of these developed the only postoperative infection in the series.

In forty eight of sixty one cases ultimate vision was 5/5 to 5/10, in six, 5/15 to 5/30, and in three, 5/30 to 5/70. In two cases of high myopia and two of complicated cataract, vision was less than 5/70.

SAMUEL A. DURR, M.D.

#### EAR

**Drury, D. W.** Progressive Deafness. The Causative Factors and Specific Diagnosis. *Laryngoscope* 1926 xxxvi 545

**Rowe, A. W.** Progressive Deafness. The General Diagnosis of Certain Causative Factors. *Laryngoscope* 1926 xxxvi 551

Drury states that for a positive diagnosis of otosclerosis several independent examinations of the

patient should be made. He has noted the consistency of the anatomical findings with the clinical variations of the condition. In a large percentage of cases of otosclerosis endocrine dysfunction is a causative factor. Attention is called to the importance of studying presclerotic cases in otosclerotic families.

Rowl emphasizes the necessity for a correct diagnosis in the treatment of otosclerosis. The causative factors should be carefully considered. Of importance among these are the endocrine glands. Interference with the function of the endocrine glands leads to constitutional disturbances which in turn interfere with the hearing apparatus, causing both functional and organic impairment.

JAMES C. BRASWELL, M.D.

**Maduro, R.** Three Cases of Septicæmia of Otitic Origin Cured by the Transfusion of Blood. (Trois cas de septicémie d'origine otitique guéris par transfusion de sang). *Arch. internat. de laryngol.* 1926 xxxvii 782

Of the author's three cases of septicæmia of otitic origin which were cured by the transfusion of citrated blood the first was the case of an infant of 4 years who developed otitis media after a tonsillectomy. Following incision of the drum the temperature became lower but several days later it rose again and its rise was accompanied by severe chills. At a second operation a thrombosed sinus was opened and packed. The blood culture made the next day was positive for streptococci. As there was no improvement despite expectant treatment, a third operation was done. The sinus was then found full of pus. As there was still no improvement after this operation, a transfusion of 130 ccm of citrated blood was given. The following day slight improvement was noted, the wound looked better and the child appeared brighter. By the end of four days the temperature began to fall. Ten days later the child was discharged from the hospital with a small retro auricular fistula.

The two other cases were essentially the same. In the second case an otitis media did not respond to puncture and an exploratory mastoid operation showed slight involvement of the cells but no signs of sinus trouble. Following this operation there was some improvement for a few days, but the symptoms then returned with marked signs of meningeal involvement and two blood cultures were positive for streptococci. Another operation, performed to explore the cerebellar fossa, revealed a small area of osteomyelitis in the mastoid cells (streptococcus) and some hyperæmia of the membranes. As there was still no change in the symptoms six days after the second operation, a transfusion of 100 ccm of blood was given. At this time the red cell count was found to be 2,380,000. On the following day the temperature was lower and the red cell count had risen to 3,900,000. The patient's condition steadily improved. A blood culture made six days after the transfusion was negative, and except for

a high fever at the time of the production of a fixation abscess, the improvement was steady. The patient was discharged six weeks after the transfusion.

Case 3 was a case of mastoiditis with a positive blood culture several days after operation. At a second operation pus was found in the sinus. After the second operation there was still no improvement and a blood count showed 3,510,000 erythrocytes and 18,820 leucocytes. A transfusion of 50 cc of citrated blood was then given. This caused slight improvement in the blood picture; a blood culture taken four days after transfusion was positive but another taken five days later was negative. After slow but steady improvement the patient was allowed to go home. Three days later he returned to the hospital because of a chill and was found to have a bronchopneumonia with a severe anemia, the red cell count being 2,640,000 and the white cell count between 30,000 and 40,000. Twelve days after his second admission to the hospital he had another chill. A transfusion of 85 cc of blood was then given. This was followed by slow improvement and the patient was sent home eighteen days later.

The author concludes that the transfused blood not only furnishes antibodies of value in combating the infection but stimulates the tissues to more rapid recovery and the production of antibodies.

MICHAEL L. MASON, M.D.

### NOSE AND SINUSES

Proetz A. W. Displacement Irrigation of the Nasal Sinuses. A New Procedure in Diagnosis and Conservative Treatment. *Arch. Otolaryngol.* 1926 14 1.

The author describes a method of introducing fluids into the posterior series of accessory nasal sinuses without trauma which may be used for treatment or diagnosis.

The patient is placed in the supine position with his head projecting beyond the top of the chair and with the occipito-atlantal joint extended until the tip of the chin and the external auditory meatus are in the same vertical plane. A V-shaped pocket is thus formed at the juncture of the face of the sphenoid with the cribriform plate of the ethmoid.

Fluid which is then allowed to flow into the nostrils from a syringe comes to rest in this pocket submerging the ostia of the posterior sinuses. Gentle suction (not over 3 lbs.) is applied intermittently to one nostril, the other being closed and the palate and tongue being held in the K position. The suction is repeated until the sinus is full (about a dozen times) when the patient is returned to the erect position and the fluid left in the sinus for an indefinite period ranging from eight hours to several days.

In some cases it may be necessary to shrink the membrane with a mild astringent fluid before instituting the treatment. There is no danger that the fluid will enter the eustachian tubes.

In all cases treated by the author physiological sodium chloride solution was used, the object being merely to dilute the retained secretion and clear the ostia. In every instance improvement resulted. The treatment was repeated at intervals ranging from three to eight days.

In the use of the described procedure for diagnosis the sinuses are filled with iodized oil and stereoscopic roentgenograms then made. Thickened or polypoid membrane may be recognized from the filling defect.

MANFORD R. WALTZ, M.D.

### MOUTH

Fish E. W. The Circulation of Lymph in the Dentinal Tubules with Some Observations on the Metabolism of the Dentine. *Proc. Roy. Soc. Med. Lond.* 1926 19 Sect. Odontol. 59.

In experiments on living teeth the author exposed the pulp and injected India ink and ferrous ammonium citrate into the pulp chamber and then examined the teeth from one to twenty-four hours later to determine how far the ink granules or citrate solution had penetrated.

The findings indicated that the tubules may be regarded as lymph channels in which by the circulation of the lymph nutrient materials, oxygen, and immune bodies are transported to the living dentine and the products of its catabolism are carried away. It appears that the fibrils of the odontoblasts which lie in these channels exert a controlling influence upon the metabolic processes in the dentine.

It was demonstrated also that the lymph penetrates all of the tubules of the dentine up to the cement margin and that in a zone at the periphery of the dentine corresponding to the area in which the terminal branches of the tubules occur there is a marked accumulation of lymph.

The movement of the tubules is evidently maintained by the contractile Rouget cells located on the capillary walls described by Wellings which by alternate contraction and expansion cause a pumping motion in the vessels thus producing an ebb and flow. The lymph escapes through lymph channels through the dentine at its apical portion.

In chemical examinations of various teeth the author found that in newly erupted teeth the dentine is not fully calcified and that for a few years after the complete formation of the teeth calcium is constantly being carried to the dentine. Symmetrical teeth have an almost identical calcium content. In carious teeth the calcium content does not seem to be low and in the later months of pregnancy the calcium content does not deviate from the normal. In different teeth there may be a variation of 20 per cent in the normal calcium salts.

In cats partial parathyroidectomy appears to cause a withdrawal of calcium salts from the dentine. In the cases of dogs a calcium deficient diet seemed partially to arrest the normal increase in the calcium content of the dentine. In the case of one young pregnant bitch a calcium deficient diet

appeared partially to arrest the normal increase in the calcium content and in another to cause the withdrawal of calcium salts from the dentine

MANFORD R. WALTZ, M.D.

## NECK

**Eckstein** The Respiratory and Iodine Metabolism in the Goiter of Puberty (Ueber den Gas und Jodstoffwechsel der Pubertätsstruma) *Monatsschr f. Kinderheilk*, 1926 xxxi, 242

The author studied the respiratory metabolism in children with the goiter of puberty by experiments of short duration performed according to the Knipping Benedict method. He concludes that the goiter of puberty is not due to a dysfunction. This conclusion has been substantiated by the investigations of Sudek and Kestner.

The administration of iodine in the form of diiodil caused no demonstrable influence on the respiratory metabolism. From the prophylactic administration of iodine in the goiter of puberty, the author has become convinced, as he reported elsewhere with Feldmann, that iodine has a catalytic action and is effective in very small amounts. He states, however, that only time will tell whether the development of goiter in later life can be prevented by this treatment.

GLASS (Z)

**Clute, H. M., and Mason, R. L.** Medical Management of Patients Before Operation for Hyperthyroidism. *Surg. Clin. N. Am.* 1916 vi 583.

**Cattell, R. B.** The Effect of Iodine on the Pathology of Exophthalmic Goiter. *Surg. Clin. N. Am.* 1916 vi 597.

**Lahey, F. H.** The Management of Toxic Goiter. *Surg. Clin. N. Am.* 1926 vi 605.

CLUTE and MASON stress the importance of rest, a high calorie diet, the relief of dehydration, digitalization in cases with auricular fibrillation, and the use of iodine in the medical management of exophthalmic goiter before operation. While diabetes is not a common complication of hyperthyroidism, the rather frequent occurrence of glycosuria renders an accurate decision as to its presence or absence of extreme importance.

Of 700 patients operated upon for thyroid disease in the Lahey Clinic in 1925, seventeen had glycosuria of sufficient degree to be classified. Of these, thirteen had true diabetes, three were potentially diabetic, and one had renal glycosuria. Since the operation, three have discontinued taking insulin and two have been able to reduce the dose. In none has there been a progressively downward tendency since the operation; the majority have shown a greater increase in tolerance than the average diabetic.

The authors quote Joslin as stating that the prognosis of thyroid disease complicated by diabetes must be guarded. Every patient with thyroid disease and glycosuria should be considered a potential diabetic for life, even though the symptoms are

alleviated by partial removal of the gland. In the cases of diabetics who have been prepared with insulin and a proper diet, the risk of operation is not markedly increased unless the patient has recently been in coma. When coma has occurred shortly before the operation, the patient's ability to withstand surgery has been materially decreased.

CATTELL says that before the use of iodine in toxic goiter the condition was associated with a fairly constant pathological picture. The gland was vascular and reddish brown and had a meat-like surface with fine lobulations and a very granular appearance. The epithelium was of the columnar type and piled up in papillary projections. The colloid was greatly diminished or absent, and when present was unevenly distributed. The iodine content was low. In from 90 to 95 per cent of the patients who are given iodine this picture is changed in the direction of involution. The degree of involution depends upon the amount of iodine given and the length of time it is given as well as upon certain individual variations. The amount of iodine steadily increases up to saturation. Iodine enables the gland to approach a more normal appearance and function, but the manner in which it brings this about is not known. That the iodine is responsible for the histological changes seems certain since the natural clinical remissions are too rare to account for them and rest and recreation have little effect on the pathological picture.

The changes in the gland explain the clinical improvement noted in approximately 90 per cent of the cases treated. It has been generally observed that the maximum clinical effect occurs after from eight to fourteen days, while the maximum effect in the gland occurs much later. In cases in which the gland shows involution and a high iodine content and the clinical condition remains unfavorable, some extra thyroid phase of the disease is suggested. In certain other cases early improvement occurs under continued iodine therapy, but later the high basal metabolic rate and severe symptoms return. Cattell has seen an involuted gland return to a hyperplastic state under favorable circumstances. This indicates that iodine treatment does not cure exophthalmic goiter, its effect being incomplete or temporary, but it is of unquestionable value as a preoperative measure.

LAHEY states that so much has been written and said regarding the elimination of multiple stage operative procedures by the use of iodine in hyperthyroidism that the value of the divided operation tends to be underestimated. One or two added steps leave the surgeon only with the possible regret of over-cautiousness, and this is not to be compared with the regret attending the lack of cautiousness in operations upon patients with an intensely toxic thyroid condition. In Lahey's Clinic the mortality of the conservative plan of treatment has been found low as compared with that of the more daring plan.

The patient should be seen by the surgeon before iodine treatment is begun in order that he may be

able to determine the degree of toxicity and the benefit to be derived from iodine. This is extremely important. Lahey has seen many patients with severe hyperthyroidism who under iodine treatment and rest, were rendered apparently good operative risks but had a serious postoperative reaction. He therefore urges that complete operations be undertaken upon patients with toxic goiter only after consideration of their state previous to the administration of iodine and that the operation be limited if there is the slightest doubt as to their ability to withstand a more radical procedure.

STANLEY J. SIEGEL M.D.

Mellanby E. McNeer J. W. Monod G. Fraser F. R. and Ryle J. A. Discussion on the Treatment of Exophthalmic Goiter. *Proc Roy Soc Med Lond* 1926 XIV Sect Surg Med Electrotherap and Therap 101.

Fraser F. R. Dunhill T. P. Salmond R. W. A. Cheate Sir L. and Others. Discussion on the Treatment of Exophthalmic Goiter. *Proc Roy Soc Med Lond* 1926 XIV Sects Surg Med Electrotherap and Therap 107.

Hoskin J. Norbury L. Brown W. L. McNeer J. W. and Others. Discussion on the Treatment of Exophthalmic Goiter. *Proc Roy Soc Med Lond* 1926 XIV Sects Surg Med Electrotherap and Therap 11.

MELLANBY spoke of the recent introduction of iodine in the treatment of exophthalmic goiter. He emphasized that iodine may produce an exacerbation in cases with a large hard gland and when it is stopped during the early month. He has treated cases medicinally with success.

MCNEER discussed the use of iodine with special reference to its value in severe thyrotoxic crises.

FRASER called attention to the necessity for variation in the dosage of iodine. In cases in which the gland is hard knobby or fibrotic and those of secondary Graves disease smaller doses of the tincture down to 2 minims a day should be given.

RYLE discussed medical treatment without iodine. FRASER classified all cases into primary and secondary Graves disease and described the natural course of the condition. The treatment should consist in rest, the elimination of sepsis, the administration of iodine and a liberal diet. Fraser believes that many cases can be cured without operation but that if satisfactory improvement does not occur in six months operation should be considered. He emphasized the importance of operation in secondary Graves disease and the necessity for and beneficial effect of operation in cases with cardiac involvement.

DUNHILL divided cases for operation into five classes as follows:

1. Those in the first six months of the disease. Operation is not required.
  2. Those past the first six months. Operation is indicated. Dunhill disagrees with Barker's statement that all patients get well in two or three years whatever the treatment.
  3. Cases with cardiac failure and auricular fibrillation. Operation is indicated.
  4. Atypical cases. Operation is not advisable.
  5. Cases of toxic adenoma. Operation is indicated.
- Dunhill recommends a two stage operation. SALMOND stated that in a majority of mild acute cases of exophthalmic goiter X-ray treatment causes marked improvement.

HOSKIN described the electrocardiogram of the thyroid heart.

PAUL STARR M.D.

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS, CRANIAL NERVES

Dandy W E Pneumocephalus (Intracranial Pneumatocele or Aerocele) *Arch Surg* 1926 xii 949

Intracranial terogenous tumors have been diagnosed during life only by means of the X ray. The author has collected twenty eight cases of intracranial pneumatoceles including three of his own.

The opening into the cranial chamber may be due to a fracture, an operation, the erosion of a chronic infection, or destruction of the floor of the skull by a tumor or dilated third ventricle in hydrocephalus. Intracranial pneumatocele may result also from infections caused by gas producing organisms. Sneezing, coughing, straining, or swallowing is necessary to force the air through a bony and dural defect into the cranial chamber. According to their location, four varieties of pneumatocele may be recognized, the subarachnoid, the subdural, the intracerebral, and the intraventricular.

The intracerebral variety appears to be the most common. According to the usual sequence of events the dura is torn and the frontal cortex injured by a fracture of the frontal sinus. Adhesions are then formed between the dura and the brain and later when the patient sneezes or coughs, air is forced through a fine canal in the cortex and expands in the softer white matter. It is not necessary to suppose that the opening is closed by a valve action; a canal may permit the passage of aqueous fluids while not permitting the passage of air. The brain tissue is damaged by the trauma and by the air.

The symptoms are mainly those of increased intracranial pressure. Frequently they develop weeks or even months after a trivial injury of the head. In the differential diagnosis, subdural hematoma, brain abscess, and meningitis must be considered. In pneumatocele there is usually a discharge of cerebrospinal fluid. Sneezing is a frequent sign and when followed by rhinorrhœa the diagnosis is almost certain.

When the discovery of the condition is left to chance, the mortality is about 40 per cent, death resulting from infection on pressure. The author suggests covering the dural tear with fascia lata sutured in place.

TRACY J PUTNAM M D

Ninger F Late Results of the Surgical Treatment of Cerebral Abscesses and Orogenic Meningitis (Résultats éloignés du traitement chirurgical des abcès cérébraux et de méningites oïgènes) *Arch intern de laryngol* 19 6 1111 668

Attention is called to the necessity of waiting a sufficiently long time before pronouncing cases of

cerebral abscess and meningitis completely cured. Mental changes are particularly likely to be overlooked. The author reports six cases.

The first was that of a 13 year old boy who developed a large abscess of the right temporal lobe during the course of a chronic bilateral otitis media. When he was first seen the patient was unconscious, his pulse was 60 and his temperature 38.6 degrees C. The neck was rigid and there was a left spastic hemiplegia with a right optic neuritis.

Upon incision of the dura over the temporal lobe, about 35 c m of thick foetid pus escaped. The temperature became normal on the third day after the operation and movements of the extremities gradually returned. The patient was discharged apparently well after two months.

The findings of a neurological examination eight months after the operation were essentially negative except for a right optic atrophy with almost complete loss of vision in the right eye.

In the second case reported hemiplegia on the left side suddenly developed two weeks after the onset of acute otitis media on the right side. No alteration of the dura was found at operation, and during the succeeding months the hemiplegia showed only slight improvement. There were no vascular findings to account for the hemiplegia.

In the third case, chronic otitis media on the right side was followed by a temporal abscess on that side and a purulent meningitis with pus cells and diplococci in the spinal fluid. Evacuation and drainage of the abscess was followed by prompt improvement, and the patient was discharged three months later. Some mental sluggishness has persisted during the seven months since the operation but is gradually clearing up.

Three cases of early meningeal involvement secondary to otitis media with evidences of labyrinthine involvement are also reported. The treatment consisted in evacuation of the primary focus, labyrinthectomy and lumbar punctures. Recovery resulted in all but in one a mild manic type of mental disturbance was present three months after the operation.

LAWRENCE JACQUES M D

Hirsch O A Clinical Study of Tumors of the Hypophysis Based upon 100 Cases Operated upon by the Author by His Endonasal Method (Contribution à la clinique des tumeurs hypophysaires basées sur 100 cas opérés par l'auteur d'après sa propre méthode endonasale) *Presse med* Paris 1926 xxvii 578

Hirsch discusses particularly the ocular form of tumor of the hypophysis because not much attention has been paid to it in the description of the classical forms of hypophyseal tumors. The ocular

form is associated with disturbances of vision and striking changes in the general condition including disturbances of genital function impotence or the menopause loss of beard and hair disturbance of sweat secretion somnolence indifference and a low temperature The hands feet and face are normal and there is no obesity

The eye symptoms consist in loss of keenness of vision and retraction of the visual field The latter often occurs in the form of bitemporal hemianopsia This is almost pathognomonic of tumor of the hypophysis but the author saw it once in a case of hydrocephalus Hirsch has found bitemporal hemianopsia in 84 per cent of his cases The rest presented either central scotoma homonymous hemianopsia nasal hemianopsia of one eye or uncharacteristic changes in the visual field Primary atrophy of the optic nerves is as characteristic of and as frequently associated with tumor of the hypophysis as temporal hemianopsia (80 per cent of the cases) Hirsch finds that congestion of the disk and optic neuritis are more apt to indicate the absence than the presence of a tumor of the hypophysis

Tumors of the hypophysis cause primary atrophy of the optic nerve because they produce strangulation of the nerve by the circle of Willis The chiasm is not situated directly in front of the pituitary fossa in the chiasmatic groove but is more than a centimeter above and back of the latter If the tumor enlarges only toward the sphenoid sinus and not toward the base of the brain there are no disturbances of vision but if it enlarges toward the base of the brain it will touch the optic chiasm and press it against the arterial circle above it and its progressive growth will be evidenced by progressive disturbances of vision

There are two forms of acromegaly the benign or classical form and the malignant form The benign form is never accompanied by visual disturbances while the malignant form always produces such disturbances after a time In benign acromegaly tissues derived from the ectoderm are particularly affected There is often intense headache The tumors are benign adenomata made up chiefly of eosinophile cells Malignant tumors are not malignant histologically but are malignant clinically because they grow progressively and their symptoms increase Their growth is expansive and only rarely infiltrating This form unlike the benign form is characterized by visual disturbances and is frequently accompanied also by obesity

ANDREW G. MORGAN M.D.

Krause F. Noteworthy Observations in the Field of Brain and Spinal Cord Surgery (Bemerkenswerte Beobachtungen aus dem Gebiete der Hirn und Rückenmarkschirurgie) *Beitr. klin. Chir.* 1926 CXXVII 330

The author reports two cases of brain tumor which were operated upon with good results In both the tumor was a fibrosarcoma the size of a

small apple and situated in the upper portion of the left central convolution Because of adhesions to the longitudinal sinus resection and suture of the latter for a distance of 50 mm was necessary

One of the patients a 61 year-old man, had had for two and a half years a twitching of the right shoulder which occasionally extended to the right foot and the muscles of the right side of the abdomen A few weeks before the operation the right leg and arm had become weak and at the time of the patient's admission to the hospital the leg was paretic although it could still be used in walking Brain pressure and papilloedema were not demonstrable

After the extirpation of the tumor which was done under local anaesthesia there was paralysis of the right leg and arm with preservation of the reflexes Movements of the fingers began after one week and movements of the arm after seven weeks and then slowly improved Although the operation was confined to the leg center active innervation in certain muscle groups of the leg became apparent only after four weeks However they then improved so rapidly that after five and a half weeks tests of standing and walking were possible The paresis was spastic with marked increase in the reflexes

In the second case that of a 43 year-old patient a twitching of the right arm and leg and severe paroxysmal attacks of headache began five years previously Ultimately abducens paresis and papilloedema developed

During an osteoplastic trephination under local anaesthesia severe collapse occurred when an attempt was made to expose the longitudinal sinus for the necessary resection The operation was therefore not completed The removal of the tumor with resection of the sinus was done five weeks later

Even after the first operation the right arm was completely paralyzed and the right leg was paretic although in this case also the operation was restricted to the leg center After the second operation the paresis of the leg became more severe Four weeks later the leg was able to bear the body weight but the arm remained completely paralyzed

Krause discusses the value of myelography in the segment diagnosis He is not convinced that the injection of iodipin into the dural sac is entirely harmless In one case he observed signs of severe irritation in the region of the lumbar and sacral roots after the injection of 3 c.c. and at laminectomy performed four weeks later because of a suspected tumor intense reddening and marked injection of the vessels were found Attention is called also to the fact that the iodipin clouds the cerebrospinal fluid to such an extent that it obscures the operative field Meningeal irritation has been reported following the injection of lipiodol but this preparation is less irritating In many cases the procedure is superfluous

As the result of progress in neurology a very good method of determining the level of the disturbance

of spinal cord conduction has been devised. By lumbar injection followed by elevation of the pelvis according to the Trendelenburg method eight days after the atlanto occipital injection, Moniz was able to demonstrate the lower border of the compression myelographically. This is a decided advance in diagnosis.

Myelography is of great importance when, because of varying symptoms in the region of the upper limits, neurological methods alone are not sufficient as in stasis of the cerebrospinal fluid above a constricting process in the spinal canal such as occurs in chronic meningitis serosa. It is of aid also in the region of the cauda equina since, because of the long intravertebral course of the roots, it may be very difficult to determine which vertebral arches should be removed.

JANSSEN (2)

**Dogliotti, A. M.** Phenomena Observed in the Brain After Homotransplantation of Fixed Brain Substance (Sui fatti che si osservano nel cervello in seguito all'omo innesto di cervello fissato) *Arch Ital di chir* 19 0 IV 173

Dogliotti implanted into the brains of dogs and guinea pigs cubes of homoplastic brain substance hardened in alcohol and left in sterile physiological salt solution for an hour before the implantation. He opened the skull and dura mater and excised a piece of brain tissue corresponding in size to the cube to be implanted. In some cases he replaced the flap of dura mater over the implanted tissue and closed the external wound, but in others he removed the flap of dura mater entirely and substituted for it a piece of hardened fascia lata or dura mater.

Examinations of the transplants and the tissue covering them were made up to as long as six months after the operations. The implant caused a slow defense reaction and was slowly destroyed by peripheral corrosion. A capsule of collagenous tissue formed around the implant which was only very slowly destroyed by phagocytosis. After four months the implants were reduced to about a third of their original volume, surrounded by the collagenous fibrous capsule of meningeal origin, and intimately adherent to the dura. Even after six months the central part remained unchanged. At the periphery of the implant there was an invasion of large cells which evidently acted as phagocytes. These were large granulo adipose cells resembling those found in reparative processes in injuries of the brain. The author believes they were of mesenchymal origin, derived from multiplication of histocytes (Marchand's adventitial cells).

In Dogliotti's opinion, hardened fascia lata, or better still, hardened dura mater has advantages over fresh tissue since the former are easier to obtain and can always be kept ready, and their use is less apt to cause adhesions. In the experiments in which Dogliotti used fascia lata or dura mater fixed in alcohol there were only slight adhesions where this foreign tissue joined the dura mater.

When the implant is completely buried in brain tissue the meninges no longer take part in its destruction, the reactive cells are produced by the neuroglia. The large cortical cells do not take part in the process of repair, and there is degeneration of the nerve cells immediately around the graft. The nerve fibers may come up to the reactive focus but do not penetrate it. They never come up to the implant itself, but remain separated from it by the neuroglia cells, the connective tissue, and the mass of granulo adipose cells which surround the implant. The destruction of the graft is brought about entirely from the periphery, the graft is never penetrated by the phagocytic cells.

AUDREY C. MORGAN M.D.

## SPINAL CORD AND ITS COVERINGS

**Peet, M. M.** The Control of Intractable Pain in the Lumbar Region Pelvis and Lower Extremities by Section of the Antero Lateral Columns of the Spinal Cord (Chordotomy) *Arch Surg* 19 6 VII 153

The author gives a brief historical sketch of chordotomy and discusses intractable pain in the lower part of the body and the legs. He abstracts nineteen cases from the literature and reports in some detail nineteen cases of his own with the findings of the neurological examinations and sensory charts.

Mention is made of the fact that an arbitrary depth of section may not prove satisfactory in all cases as all cords are not of exactly the same size and a difference of 0.5 mm. in the depth of the section may leave intact some of the fibers which should be severed. In some cases the loss of the pain and temperature sensations may not correspond to the level of the segment incised but may bear a closer relation to the depth of the incision, that is, the level will more nearly approach the distribution of the incised segment as the section is carried deeper. This is true especially as regards the anterior portion of the anterolateral tract.

In one case a bilateral section was made at the eighth dorsal segment with loss of pain and temperature sense below the eleventh dorsal segment on the left and only diminished pain on the right. This incision was 2.5 mm. deep on the right and slightly less on the left. In another case two bilateral chordotomies performed to a depth of 3 mm. at the sixth and third dorsal segments resulted only in analgesia of the region of the sciatic distribution in the lower part of the legs. A third chordotomy done at a lower level but 0.5 mm. deeper produced higher analgesia and thermanesthesia. The highest levels were obtained when the incision extended directly forward through the anterior root. Some cases showed temporary motor weakness or retention of urine. The cutaneous and deep reflexes were modified only occasionally and then perhaps as the result of trauma to the adjoining fiber tracts caused by carrying the incision too wide or by manipula-



tion. The sensations of touch, motion and position, vibration and localization were preserved.

In the cases reported in the literature the primary conditions which eventually brought the patient to operation for the relief of pain were: malignant disease of the spine in three, gunshot injury of the spine in three, tabes dorsalis in three, myelitis in two, carcinoma of the rectum in two, carcinoma of the caecum in one, carcinoma of the uterus in one, carcinoma of the breast in one, sarcoma of the thigh in one, shell wound of the sciatic nerve in the pelvis in one, and pain in the vagina and rectum of unknown origin in one. The relief was satisfactory in fourteen and partial in five cases. Judging from the records, satisfactory relief is not always complete absence of pain, but complete absence of pain was obtained in most of the cases in which the result was recorded as satisfactory.

In the author's series the primary conditions were carcinoma of the uterus or cervix in nine, carcinoma of the breast in two, sarcoma of the leg in two, carcinoma of the prostate in one, carcinoma of the lung in one, retroperitoneal malignancy in one, pain in the legs associated with spastic contractions in one, pain in the legs of unknown origin in one, and avulsion of the lumbosacral plexus in one. In five of the cases of malignancy there were metastases in the vertebrae. The final results were complete relief from the pain in sixteen, partial relief in two, and complete but apparently temporary relief in one.

The technique of the operation is described. The chordotomy should extend to a depth of 3 mm. immediately in front of the dentate ligament and pass directly forward through the exit of fibers of an anterior root.

In the thirty-eight cases reviewed the results were in the main satisfactory. The author believes that chordotomy with section of the anterolateral columns is the best means at our disposal to relieve intractable pains in the lower half of the body.

(C. C. ANDERSON, M.D.)

### SYMPATHETIC NERVES

Adrian E. D. Smith, G. F. Bramwell, E. Bankart, A. S. B. and Others. *The Sympathetic Innervation of Striated Muscle*. *Proc. Roy. Soc. Med. Lond.* 1916, vol. Sect. Neurol. 1.

This is a symposium on the anatomical and physiological basis of Hunter's theory and the results of Royle's sympathetomy for spastic paralysis. The discussion of the finer points of the anatomy and physiology of the sympathetic nerve supply of striated muscle is too technical and detailed to be summarized in abstract form. Sympathetic endings in muscle can be demonstrated histologically, but the results of sympathetomy differ in different animals.

Fourteen cases in which Royle's operation was performed were reported by Bankart, Jefferson and Beattie. In Beattie's case that of a 7-year-old child with spastic paraplegia who had never walked, the

troublesome clonus was relieved and walking became possible. In all of the other cases reported there was no definite improvement, although some suppleness to passive movement was usually noted and there was vasodilatation with increased warmth in the affected limb.

TREACY J. PIERCE, M.D.

Bazy, L. and Lataix, G. *Causalgia Originating in an Amputation Stump of the Right Thigh. Section of the Lumbar Rami Communicantes of the Right Sympathetic Trunk* (*Causalgie prenant origine au niveau d'un moignon d'amputation de la cuisse droite. Section des rami communicans lombaires du tronc sympathique droit*). *Bull. et mém. Soc. nat. de chir.* 1916, vol. 152.

This article is a very detailed report of a case of causalgia treated by ramisection, performed according to the method advocated by Royle and Hunter.

The patient was an acrobat who had a skull fracture and an open fracture of the right knee which necessitated amputation through the middle third of the thigh. A year later, three days after a fall on the side of the stump which appeared of no importance at the time, he began to suffer from general malaise and a sticking pain which radiated into Scarpa's triangle and the gluteal region and was accompanied by trembling of the stump. There was also a moderate elevation in the temperature.

These attacks recurred regularly on an average of five times daily and assumed a character described as follows:

1. Stabbing pain on the posterior surface of the end of the stump reaching its maximum intensity in about three minutes and subsiding after a total duration of five minutes.

2. General depression, rendering connected conversation impossible and associated with formication in the right half of the head which occasionally spread to the arms but ceased the moment the stump began to tremble. The duration of this phase was five minutes.

During the attacks the stump became cyanotic. In the physical examination only mydriasis of the right pupil was noted. Palpation of the stump provoked trembling but no pain.

As these attacks rendered the patient's life intolerable, operation was undertaken. The lumbar rami communicantes were resected on the right side, the route of approach of Royle and Hunter being used. The patient made a practically uneventful recovery, and up to five weeks later there had been no return of the causalgia. The pupils became equal a few days after the operation.

ALBERT I. DE CROIX, M.D.

Davis, L. and Kanavel, A. B. *The Effect of Sympathetomy on Spastic Paralysis of the Extremities*. *J. Am. M. Ass.* 1926, vol. 189.

This article is a summary of the authors' experience with Royle's operation of sympathetomy for spasticity and a review of the anatomical and

experimental work on which Hunter's theory was based. From clinical and experimental study the following conclusions are reached:

1. Histological evidence points to the dual innervation of skeletal muscle from the cerebrospinal and sympathetic nervous systems.

2. Experimental removal of the sympathetic trunks in cats produces no effect on normal tone that can be observed or recorded.

3. The onset and maintenance of decerebrate rigidity in cats is unchanged after the removal of the sympathetic innervation to an extremity. With the exception of Royle's work on goats, the evidence in the literature is in agreement on this point.

4. The problem of muscle tone is extremely complicated. One or several mechanisms may be responsible for changes in muscle tone. At present there is no accurate clinical method for measuring

changes in muscle tone. Lengthening and shortening reactions and "hung up" reflexes alone are insufficient indications for operation.

5. Kymographic tracings of tendon reflexes, faradic stimulation, active and passive motions, and tremors before and after removal of the sympathetic nerve supply have shown no change in cases of paralysis agitans, postencephalitic Parkinson's disease, system degenerations of the spinal cord such as lateral sclerosis, traumatic lesions of the spinal cord, cerebral hemiplegia, or Little's disease.

6. The sympathetic nervous system may have some function dealing with the metabolism of muscle such that under certain conditions, the contractility of a muscle may be changed by the removal of sympathetic impulses. Such a function would probably be chemical in nature.

IRVING J. LUTNAM, M.D.

# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

**Séneque and Lecene** Two Cases of Cytosteatonecrosis of the Subcutaneous Cellular Tissue Breast and Abdominal Wall (Deux cas de cyto-stéatonecrose du tis u cellulaire sous cutané sein et paroi abdominale) *Bull et mém Soc nat de chir* 1926 lu 697

The first case reported in this article was that of a woman 44 years old who sustained a blow on the left breast and three months later consulted Séneque because of a firm freely movable and slightly tender nodule which had persisted just beneath the skin at the site of the injury.

At examination the overlying skin was found to be slightly discolored.

Cross section of the mass after its removal revealed many whitish and grayish points disseminated in the fatty areolar tissue. On microscopic examination of frozen sections stained with Nile blue the fat cells were found to be laden with fatty acids and soaps.

In the second case a movable and slightly tender area of induration measuring about 3 by 4 cm developed spontaneously in the subcutaneous tissue of the left flank. In this case also saponification was found in the excised mass.

LAWRENCE JACQUES MD

**Lenormant C** A Voluminous Sarcoma of the Breast Cure of Three Years Duration (Volumineux sarcome du sein guérison après trois ans) *Bull et mém Soc nat de chir* 1926 lu 166

A woman of 52 years had had a small nodule in a breast for about twenty years. The nodule suddenly began to grow rapidly and in six months attained the size of a man's head. The patient's general condition became poor, but there was no evidence of metastases nor was the tumor fixed to the chest wall.

Simple excision into normal tissue regarded as a purely palliative operation was followed by a cure of three years duration.

Microscopically the tumor was a spindle cell sarcoma.

In the discussion of this case, ARRON MONTCLAIR and WIART reported cases of similar tumors with apparent recovery for periods of from two to eighteen years.

LECENE cited the cases of two patients who remained well for ten years and then succumbed to metastases which were formed in the lungs (shown by autopsy). He stated that metastases appearing after many years without recurrence of the tumor at the original site are not rare.

ALBERT F DE GROAT MD

## TRACHEA LUNGS AND PLEURA

**Singer J J** Diagnostic Pneumothorax *Ann Clin Med* 1926 iv 907

Diagnostic pneumothorax has helped to clear up many obscure lung conditions which formerly were undiagnosed.

By this method—the production of a bubble of air in the pleural cavity—it is possible to show irregularities of the pleura, adhesions and abnormalities of the diaphragm and mediastinum by shifting the patient's position. A bronchiectatic atelectatic lobe hidden by the cardiac shadow may be visualized. The value of the procedure is further enhanced by the injection of lipiodol.

The technique of pneumothorax consists in infiltrating the skin with a local anesthetic incising the skin injecting more of the local anesthetic to the pleura taking a manometer reading, and then introducing the proper amount of air.

Although the author has never seen a severe reaction following this procedure he believes it should be reserved for cases in which the ordinary methods have failed to give the necessary information.

Singer reports four cases in which the method fully demonstrated his claims.

DON B. HUTCHENS MD

**Forestier J** The X Ray Examination of Respiratory Cystitis with Iodized Oil (Lipiodol) *Ann Clin Med* 1926 iv 869

The opaque medium used by the author for X ray examination of the bronchial tree is a 40 per cent vegetable iodized oil (lipiodol) which is both innocuous and antiseptic.

The oil may be injected by the tran glottic the laryngeal the bronchial or the cricothyroid route. In the use of the cricothyroid route, which is the easiest a direct injection is made through the midline of the neck between the cricoid and thyroid cartilages.

A successful injection requires the co-operation of the patient suppression of the cough reflex (which is facilitated by the application of a local anesthetic to the pharynx and a hypodermic injection of morphine), the immediate injection of the warm oil in appropriate quantities up to 60 ccm and the placing of the patient in such a position that the area to be explored will be as dependent as possible.

The roentgenogram should be taken immediately and in different positions with the use of the Bucky Potter diaphragm. Stereoscopic films should be made.

No fatalities due to the procedure have been reported. Hemorrhage active tuberculosis and a poor general condition are contra indications.

The author states that he has obtained excellent results with this method in the study of the anatomy and physiology of the bronchial system. It is a most definite aid in the determination of deviations of the trachea and bronchi, the localization of foreign bodies, areas of bronchiectasis, tuberculous cavities, lung abscesses, thoracic fistulae, and chest tumors, the control of the collapse of the lung in therapeutic pneumothorax, and the examination of the collapsed lung.

As a therapeutic measure, the injection of lipiodol has been of distinct value in cases of bronchiectatic cavities, and occasionally in those of tuberculous cavities. It may prove beneficial also in the treatment of conditions such as asthma and bronchitis.

D N K. HUTCHENS M.D.

#### Boehm, G. On Roentgenograms of Infarcts of the Lung. *Brit J Radiol* 1926 xxvi 199

Boehm reports a case of pulmonary infarction which is interesting because few cases have been studied roentgenologically and because it was under observation until complete recovery had occurred.

The patient was a woman 41 years of age who sixteen days after a myomectomy, had a sudden attack of dyspnoea and cyanosis and five days later developed fever. A diagnosis of pneumonia was made. The diagnosis of infarct was made twenty-seven days after the onset of the condition and was based upon the roentgenological findings.

The roentgenogram showed a rather dense shadow in the middle of the right lung fields which presented varied shapes depending upon the patient's position. In the postero-anterior position, its shape was oval, whereas in the right oblique position it was that of a wedge. In both positions the borders were definite and the outline was distinct. There was some thickening of the interlobar pleura and the shadows cast by this thickened pleura made it possible to localize the lesion in the lower part of the upper lobe.

With the patient's recovery the abnormal shadows disappeared from the roentgenogram.

CHARLES H. HEACOCK M.D.

#### Graham E. A. The Surgical Treatment of Pulmonary Suppuration in Children. *J Am M Ass* 1926 lxxvii 806

Of 218 patients with pulmonary suppuration who were treated by Singer and Graham in the last five years, forty were children under 12 years of age. Of these forty, 82 per cent are now free from cough and other symptoms. The mortality was 12.5 per cent.

The treatment of acute pulmonary abscess must depend largely upon the site of the lesion. The three most common types of cases to be differentiated are those with an abscess near the hilus, those with an abscess in the periphery of the lung, and those with multiple abscesses scattered throughout the lung fields. On the whole it may be said that

abscesses near the hilus are not amenable to surgical drainage while those at the periphery may frequently be so treated.

The treatment should consist in eradication of the source of the infection, the establishment or improvement of drainage, the collapse of any cavities that may be present, the removal of chronically diseased tissue, and general hygienic treatment, including treatment with light.

The eradication of the cause of the infection includes the removal of any aspirated bodies from the bronchi. Vaccines have proved of little value. In the cases in which the spirochaeta is predominant, arsphenamine has been found beneficial.

In a discussion of drainage, mention must be made first of natural drainage through the trachea aided by posture. Drainage is frequently improved by bronchoscopic suction. In cases of peripheral abscess which has ruptured into the pleural cavity drainage of the resultant empyema frequently clears up the condition. In cases with peripheral cavities surgical drainage may be resorted to. The operation may be performed in several stages. The first stage should consist in the production of adhesions. In the absence of pleural adhesions an abscess cannot be drained and even exploratory puncture should not be done.

Surgical drainage should not be undertaken in the formative stage of an abscess.

Collapse of a cavity is obtained preferably by artificial pneumothorax. Other procedures for this purpose are avulsion of the phrenic nerve and thoracoplasty. The latter are indicated particularly for abscess at the hilus.

For the removal of the diseased tissue Graham prefers the operation of cauter pneumectomy in which, after adhesions have been formed and the diseased lung has been laid bare, the tissue is removed bit by bit with the actual cautery.

The prognosis of acute pulmonary suppuration must be guarded as the mortality is apt to be high. It must be borne in mind, however, that a spontaneous cure often occurs.

The chief complications of pulmonary suppuration are cerebral embolism, brain abscess, haemorrhage and abscesses elsewhere in the body.

RALPH B. BETTJALI M.D.

#### Lichty J. A., Wright, F. R. and Baumgartner E. A. Primary Cancer of the Lungs. A Clinical Report of Seventeen Cases. *J Am M Ass*, 1926 lxxvii 144

It appears evident from all statistics that since 1918 there has been a definite increase in the incidence of carcinoma of the lungs. Therefore in the diagnosis of chronic diseases of the chest the possibility of primary carcinoma of the lungs should be borne in mind.

Cancers of the lungs are classified as nodular, infiltrating and diffuse or military. The most frequent type is the adenocarcinoma. Lung cancers may arise from the bronchus lining or glands or from the

alveolar lining Metastasis in the regional lymph glands and liver are common

The usual symptoms are pain in chest, dyspnea cough, general weakness, loss of weight cachexia fever and bloody expectoration In the cases reported pain was the earliest and most persistent symptom and always occurred on the same side as the lesion It was usually worse at night The weakness was of a continuous and progressive type and was not alleviated by rest Loss of weight was not an early sign There was nothing characteristic in the early physical signs The outstanding sign at the stage in which most of the patients were seen was impairment of the percussion resonance

In the diagnosis of carcinoma it is necessary to rule out the more common lesions of the lung While the X-ray picture is not absolutely characteristic an irregular shadow should be looked upon with suspicion especially if carcinoma is known to be present in some other part of the body

The conditions from which carcinoma of the lung must be differentiated are pulmonary tuberculosis unresolved pneumonia fibroid pleurisy lung syphilis mycoses of the lungs bronchiectasis interlobar empyema, lung abscess and enlargements and tumors common to the mediastinum In this differentiation fluoroscopic roentgenographic and sputum examinations will be of aid The blood picture of an anemia with leucocytosis and neutrophilic increase is most characteristic of malignancy

In conclusion the authors state that there seems to be little evidence to support the theory that the increase in the incidence of lung carcinoma is due to the influenza epidemic of 1917, 1918 or to the inhalation of irritating substances such as smoke and gas According to the most recent statistics carcinoma of the lungs is about seventh in frequency among malignant lesions cancer of the stomach being first

CYRIL J GASELL M D

Morrison J T The Surgery of the Lung *Brit J Surg* 1926 xiv 94

War experience taught that while a sucking wound is dangerous a widely opened thorax permits extensive operative procedures on the lung with comparative safety There has been controversy with regard to the conditions under which respiration is carried on in these cases Some insist on the pliability of the mediastinal curtain and show that alterations in pressure on one side are automatically and fairly accurately reproduced on the other The corollary of such a view is that given the cross sectional area of the trachea and the patient's vital capacity it is merely a mathematical problem to determine how large an opening may be made in either one or both sides of the thorax before the lungs will cease to function and death will result from asphyxia The area of such openings has been computed at from 64 to 10 sq cm

However large thoracotomies far exceeding the highest estimate of the margin of safety have been made According to Duval's experience safety lies

in securing a very wide opening into the chest and as complete a collapse of the lung as possible on that side

Morrison maintains that the truth lies somewhere between these two positions stating that while the mediastinal curtain is no doubt a structure most sensitive to variations in pressure there is surely a limit to its pliability even in health

The author describes his experimental operations in detail and discusses the results he obtained and their application to clinical cases

SAMUEL KAHN M D

Bendove, R A The Mechanism of Localization of Gas in the Pleural Cavity and Its Clinical Application in Pneumothorax Therapy *Arch Surg* 1926 xiii 369

The difference in the elasticity of the diseased and undiseased lung tissue as well as the difference in the intrapulmonary and intrapleural pressure makes it possible for the gas introduced into the pleural cavity for the induction of artificial pneumothorax to localize itself over the diseased portion without causing any considerable decrease in the function of the unaffected portion of the treated lung provided it is administered in small amounts and at frequent intervals

These pneumodynamic principles should be made use of in every case treated by artificial pneumothorax They are best applied however in cases of the exudative type of pulmonary tuberculosis of not very long duration which are free from pleural adhesions In such cases pneumothorax therapy is to be considered not as a last resort but as the treatment of choice since it is followed by a more speedy and complete anatomical and functional recovery than other measures

In cases of the productive or proliferative type of pulmonary tuberculosis these pneumodynamic principles of gas localization usually cannot be applied because as a rule the condition runs a mild clinical course and when severe symptoms are first manifested it is usually far advanced and there are marked pleuritic lesions which render therapeutic pneumothorax inapplicable In such cases thoracoplasty is the indicated treatment provided the contralateral lung is in good condition

Slight or even moderate involvement of the other lung is not a contra indication to artificial pneumothorax of the expansile type because the function of the undiseased portion of the treated lung is not curtailed by it much and little demand is made for extra respiratory function of the other lung In such cases the amounts insufflated should vary from 50 to 400 ccm of air and the intervals from five to ten days No generalization is possible Each case should be treated according to the patient's vital capacity and according to the extent of the involved and uninvolved portions of the treated lung as determined by frequent roentgenoscopic observations and periodical spirometry

RALPH B BETTMAN M D

**Lanos J** The Diagnosis and Treatment of Interlobar Pleurisy in the Adult (Remarques sur le diagnostic et le traitement des pleurésies interlobaires chez l'adulte) *Paris chir*, 1926 xviii, 137

In the adult, interlobar pleurisy occurs most frequently on the right side and the pus becomes encysted in the anterior part of the interlobar incisure. The classical syndrome described by the textbooks is hardly ever seen. The general and functional symptoms—persistent fever, attacks of coughing, more or less copious expectoration, and impairment of the general health—quite frequently suggest tuberculosis.

While it is very difficult to detect this type of pleurisy by clinical examination, the diagnosis is greatly facilitated by roentgenoscopy. The picture from in front is not very characteristic, showing only a hazy obscurity detached from the diaphragm, but the pathognomonic sign is furnished by examination in profile and obliquely when a spindle shaped shadow corresponding to the incisure is seen.

The treatment is surgical drainage. A drain should be left in place for eight days. During this time irrigation with an antiseptic solution may be given. Great care must be taken to keep the wound clean. The dressing should be changed every day.

The roentgen picture enables the surgeon to make the incision at just the right place and is much more certain and less dangerous than exploratory puncture.

An illustrative case is reported

AUDEY G MORGAN M D

## ŒSOPHAGUS AND MEDIASTINUM

**Moersch, H J and Conner H M** Hysterical Dysphagia *Arch Otolaryngol*, 19 6 iv 112

Hysterical dysphagia is a type of functional dysphagia characterized by a sense of obstruction at or about the œsophageal introitus practically always associated with pallor and secondary anæmia and frequently associated with enlargement of the spleen.

The line of demarcation between hysterical dysphagia and other types of functional dysphagia is not always clear although, as a whole hysterical dysphagia represents a very definite clinical entity.

The authors studied sixty five cases, all those of women. The average age for the group was 45 years and the average duration of symptoms eight years. The spleen was palpable in twenty cases and the average hæmoglobin for the entire group was 48 per cent. The peculiar pallor in these cases somewhat resembles that of pernicious anæmia. Roentgenological examination of the œsophagus was negative in fifty cases but œsophagoscopy examination showed that the mucous membrane of the upper part of the œsophagus was dry and atrophic with loss of elasticity, and that it bled easily on manipulation.

The treatment consists in passing into the stomach a plain œsophageal sound guided by a previously

swallowed silk thread. The size of the sound is immaterial. Usually nothing further is necessary to effect a cure except reassurance. The dysphagia disappears, the blood picture is improved at once, and the spleen may return to its normal size. If the trouble recurs, a second passage of the sound will always afford relief.

**Abel A L** The Treatment of Cancer of the Œsophagus *Brit J Surg*, 1926 xiv, 131

Abel endeavors to prove that cancer of the œsophagus can be diagnosed early, that it is a relatively benign mild type of malignant growth that radium, the X rays and diathermy are of very little value in the treatment and that the operations suggested are feasible and there is no physical or pathological reason why they should not give a successful result.

Cancer of the œsophagus is a common disease, one of every twenty malignant growths being situated in the gullet. For several weeks or months there is a sense of oppression or weight beneath the sternum due to slight dilatation of the œsophagus from the early narrowing of its lumen and colicky sensations of oppression are caused by increased muscular contractions of the organ. To overcome the sense of fullness while eating the patient is obliged to take considerable draughts of fluid. Ultimately there is a distinct obstruction to the passage of food. The dysphagia is progressive at first being noticed with solids, later with semi solids, and finally with liquids.

In the typical roentgen picture the barium passing through a malignant stricture presents an irregularity of its lower extremity (rat tail like appearance). On œsophagoscopy, the wall of the œsophagus appears relatively immobile and stiffened. The appearance of the tumor varies according to the type of the growth. The tumor of the proliferative variety has a cauliflower like appearance, is covered with a blood stained foetid discharge and bleeds very easily. In the tumor of the ulcerative type, the hard, raised irregular and everted edge is first seen, the ulcer appears somewhat raised, and the surrounding wall dense and indurated. A light touch with a swab removes blood stained foetid material. In cases of the scirrhus type of growth the lumen of the œsophagus is seen to be greatly narrowed and deformed, while the mucosa appears retracted, red, smooth, and immobile. Whenever possible a portion of the growth should be removed for microscopical examination.

Primary carcinoma of the œsophagus may occur at any level, but is usually found at either extremity or in the narrowed portion where the œsophageal lumen is diminished by the pressure of the left bronchus. The middle portion of the œsophagus is most commonly affected, the lower portion next most frequently and the upper end next most frequently the incidence being roughly 3:2:1. Cancer of the œsophagus spreads by direct extension and by the lymphatic stream. It is slow to affect the lymphatics and to form metastases.

The majority of cases in England are treated by gastrostomy alone. A further step is repeated dilatation of the stricture. Intubation may be beneficial but is associated with the danger of œsophago-tracheal fistula resulting in death. In the treatment of malignant disease in general radium causes a regression of the growth at the site of application, but sloughing is increased hæmorrhage is brought on more quickly and the periphery of the growth or the infected glands at a distance are stimulated to increased activity. However in the œsophagus which is unique in its position as an anatomical structure some of the contra indications to radium may be disregarded. While radium therapy is not without a certain degree of danger it frequently causes a great improvement in the patient's condition. The radium is best applied through an œsophageal catheter. Judging from the results obtained in cases of malignant disease of the mouth and pharynx diathermy should have an effect equal to if not better than the application of radium.

The cure of cancer requires the radical removal of the disease and in the absence of contra indication such as metastases or extreme emaciation this should always be attempted. A fairly large proportion of cases are surgically operable when they are first seen by the medical practitioner and from 30 to 50 per cent are operable when they are seen by the surgeon. The chief dangers of operations upon the cervical œsophagus are (1) shock which is easily combated (2) hæmorrhage which is not difficult to deal with and (3) infection or so called sepsis.

The operation upon the cervical œsophagus consists of three stages (1) exposure (2) excision and (3) reconstruction. It is usually advisable to attack the growth from the right side of the neck in order that manipulation may not be hampered by the thoracic duct. An estimate having been gained of the breadth of the flap required to restore the continuity of the gullet a flap is made with its base either at the right or the left side of the neck. The sternomastoid muscle is divided at its origin from the sternum and clavicle and its anterior border is sutured to the prevertebral region. The affected portion of the œsophagus is then seen lying behind the trachea with the prevertebral muscles and the sternomastoid behind and to the outer side. The œsophagus is separated from the adjacent structures by very blunt dissection and the region of the growth carefully examined to determine the possibility of a radical cure. The incision around the growth must include  $\frac{3}{4}$  in of apparently healthy œsophageal wall. The paratracheal para œsophageal and inferior deep cervical glands are exposed and may be removed on both sides of the neck. The flap of the skin is then turned inward and brought to lie in the position vacated by the piece of œsophagus removed.

For cancers of the œsophagus which are situated in the middle two fourths of the gullet posterior mediastinotomy must be performed. As a preliminary procedure to the major operation, a gastro-

tomy or jejunostomy is done. After the dehydration has been overcome the condition of the blood pressure requires attention. The blood pressure must remain above 125 mm Hg (systolic) and the hæmoglobin should not be less than 60 per cent.

The success of the operation depends in large measure upon the skill of the anesthetist and the efficacy of the method of inducing anesthesia. As it is extremely easy to infect the pleura the operations for partial or total œsophagectomy which are most apt to be successful are those which do not entail opening the lumen of the gullet *in situ*. After the operation blood transfusion is perhaps of the greatest aid and may be performed even if it was done before the operation.

If the growth is situated at or above the level of the aortic arch the incision is made in the right side of the back of the thorax. If it is below this level the incision is made on the left. A 3 or 4 in portion of the lowest rib exposed is resected subperiosteally. The intercostal nerves are injected with absolute alcohol for anæsthetic purposes. The intercostal arteries are tied at both ends as each rib and artery is severed. The œsophagus is separated from the loose cellular tissues in which it lies by means of blunt dissection. The skin flap is then placed anterior to—that is deep to—the œsophagus and sutured as nearly as possible to the skin of the back from which it was originally divided. The growth and an adjacent  $1\frac{1}{2}$  to 2 in portion of the œsophagus on either side of it then lie at the bottom of a groove in the back.

Some 7 to 10 days later the cancer bearing area of the œsophagus is removed with as much normal tissue as feasible on either side of it. Lastly the remaining inner and outer edges of the skin wound are undermined and drawn together the newly formed œsophagus being thus made subcutaneous. Operation for the radical removal of the lower 2 to 3 in portion of the œsophagus is best performed by means of a low left sided posterior mediastinotomy and an œsophagogastrostomy.

Cases of cancer of the œsophagus arising at the cardia whether primarily œsophageal or primarily gastric in origin usually demand an abdominal laparotomy.

MORRIS H. KAHN, M.D.

Schreiner B. F., Eschelman K. F. and Kress L. C. Radiation Therapy in Cancer of the Esophagus. *J. Cancer Research* 1916 x 203.

This article is a report on sixty three cases of cancer of the œsophagus. Fifty-one of the subjects were males. Thirty-five of the males had used tobacco.

Of thirty six tissue specimens examined thirty-two showed epithelioma and in nineteen there waspearly body formation. Of four which showed adenocarcinoma three were metastatic from the stomach.

Radium was introduced by placing the tandem tubes through the œsophagoscope for periods of from 300 to 800 mgm. hrs. per tube.

Recently the X ray has been used with the radium. Gastrostomy must be done early.

In none of the cases reviewed was a clinical cure obtained. One patient survived for a year and four months but most of the patients died within eleven months.

PAUL W. SWEET, M.D.

Steindler, A. Posterior Mediastinal Abscess in Tuberculosis of the Dorsal Spine. *Illinois M. J.* 1926 1 or

In over 50 per cent of cases of tuberculosis of the spine the dorsal segment is involved, and about 45 per cent of cases of dorsal tuberculosis are complicated by abscess formation. In about 15 per cent

of the latter the abscess projects into the thoracic cavity, constituting a dangerous mediastinal complication. Mediastinal abscesses may extend laterally, posteriorly, into the spinal canal forward, or downward.

For many cases of mediastinal abscess, and especially for those in which paraplegia results from pressure of the abscess on the cord, the author advocates costotransversectomy. From the findings at autopsy in which the communication between the mediastinal abscess and the spinal canal could be demonstrated, he concludes that evacuation of the posterior mediastinum by costotransversectomy is a thoroughly rational procedure.

A. GOTTLIEB, M.D.



# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

Hunter R H The Etiology of Congenital Inguinal Hernia and Abnormally Placed Testes  
*Brit J Surg* 1926 xiv 125

In the newly born infant the testis processus vaginalis gubernaculum and fascial coverings can be lifted out of the scrotum without tearing anything but a little superficial connective tissue. The gubernaculum is therefore not attached to the skin of the scrotum and the testis cannot be drawn from the abdominal cavity to the scrotum by its contraction. The gubernaculum at first acts as a kind of anchor to the testis. In the human fetus its largest strand normally passes to the scrotal region and forms the path for the large growing cells which cause the growth of the processus vaginalis.

The processus vaginalis develops as a cone shaped diverticulum of peritoneum and just before the descent of the testis its apex normally reaches to the point of junction between the anterior abdominal wall and the scrotum. During the descent of the testis the peritoneum which is adherent to the proper fibrous tunic of the gland is drawn down into the scrotum. If the processus vaginalis is larger than normal before the testis descends the excess of peritoneum will become folded upon itself and form a hernial sac. MORRIS H KAHN M D

Stich R Mistakes in Hernia Operations (Ueber Fehler bei Hernienoperationen) *Zentralbl f Chir* 1926 lvi 884

In operations for sliding hernia the intestine may be very easily injured. The author cites a case in which a 12-cm portion of the descending colon was removed without the surgeon's being aware of the accident and death resulted from peritonitis.

In a case in which an operation was performed for incarcerated femoral hernia adherent omentum and a loop of small intestine were found in the narrow neck of the hernial sac. After enlargement of the hernial aperture and resection of the omentum the stump of the intestine and omentum were unintentionally replaced over the posterior margin of the hernial sac retroperitoneally into the pelvic cavity. However during the care of the hernial sac the mistake was recognized and promptly corrected.

The author calls attention also to the danger of bladder injuries during operation for inguinal hernia. These are especially apt to occur when the abdominal walls are poorly developed and the surgeon in his desire to include as much tissue as possible in the Bassini suture introduces his needle too deeply. This mistake may be avoided by placing the finger under the edge of the muscle before introducing the needle. NEUFERT (Z)

Long J W The Value of Enterocolostomy Combined with Enterostomy in Acute Peritonitis  
*Surg Gynec & Obst* 1916 xliii 61

Long discusses the value of enterocolostomy in cases in which a gangrenous appendix lying low in the pelvis produces local peritonitis and the peritonitis attacks the adjacent coils of the intestines causing a typical adynamic ileus. The ileus occurs at two points—in the terminal ileum and in the pelvic portion of the sigmoid. In such cases appendectomy with enterostomy gives the best results.

In cases in which the peritonitis ascends and becomes diffuse enterostomy cannot give relief no matter where the tube is placed as the ileus is of a duplex character. For such cases Handley advises anastomosis of the small intestine to the transverse colon and a cecostomy. Long reports two cases of diffuse peritonitis in which he used this operation with success. JACOB S GROVE M D

Klug W Is the Thoracic Duct Suitable for Natural Drainage in Peritonitis? (Tignet sich der Ductus thoracicus zur natürlichen Drainage bei Peritonitis?) *Deutsche Zeitschr f Chir* 1916 cxciv 310

Because of a successful result obtained by laparotomy irrigation and the establishment of a thoracic fistula in the case of a 20 year old patient with peritonitis twelve hours after the perforation of a gastric ulcer the author attempted to determine the importance of the thoracic duct as a natural drainage route in peritonitis by means of experiments performed upon dogs.

In the first series of experiments necrosis of the pancreas was produced by severing the gland from the duodenum or by ligating the pancreatic vessels and on the following day the thoracic duct was opened in the neck. The lymphatic fistula secreted very weakly and a fatal termination could not be prevented.

In the second series of experiments the thoracic duct fistula was formed first peritonitis was then produced by the introduction of a drum into the abdominal cavity and a flow of lymph from the fistula was stimulated by the injection of non sterile physiological salt solution into the abdominal cavity. Again the fistula was found to have no favorable effect upon the peritonitis.

When injections of indocarmine were made into the abdominal cavity there was no staining of the lymph discharged from the fistula although the urine became colored quickly.

The author concludes that resorption from the peritoneum occurs chiefly by way of the blood stream and that thoracotomy is of no therapeutic value. JEHN (Z)

## GASTRO INTESTINAL TRACT

Klein, E. Gastric Motility. III. The Mechanism of the Pylorus. *Arch Surg*, 1916, 61, 1224

The author reviews considerable evidence disproving the theory of Cannon that the discharge of gastric contents depends upon the acidity on the gastric and duodenal sides of the pylorus.

In 1913 Cole reported that there is no roentgenological evidence in man of a periodical opening and closing of the pyloric valve independent of the gastric cycles. Klein observed that chyme was propelled into the duodenum with each antral contraction, and other workers have since made similar observations. Wheelon and Thomas have found that the antral contractions always occur during a stage of pyloric relaxation and they conclude that if acid acts to regulate the pylorus it must act in a similar way also on the antrum and stomach since the motility of the antrum determines the motility of the pylorus.

Klein therefore regards it as justifiable to assume that the pylorus is normally open at the height of antral contraction, and that every antral contraction is normally followed by a discharge of chyme through the pylorus. His conclusions with regard to the effect of acids and other substances on the pylorus are summarized as follows:

- 1 The presence of acid on the gastric side is not necessary for the opening of the pylorus
- 2 Normal concentrations of acid on the duodenal side do not keep the pylorus closed
- 3 Concentrations higher than normal in the stomach cause a slowing of gastric peristalsis, and while this is especially notable in concentrated experimental solutions it is noticeable also within the limits found in hyperchlorhydria
- 4 Very strong acids cause inhibition of peristalsis and sometimes reverse peristalsis and vomiting
- 5 The site of origin of this reflex is the duodenum
- 6 The theory of acid control on both sides of the pylorus (Cannon) or from the duodenum alone does not explain all known facts

Mechanical stimulation of the pylorus is next considered. The higher the fluid content of the food the more rapid its discharge. It has been found experimentally that whenever a solid particle of food reaches the pylorus it excites a retrograde peristalsis which propels it away from the sphincter. It is therefore very likely that the stimulus for these retrograde waves is in the pylorus. Hirsch first called attention to the fact that the fluidity of the stomach contents is one of the most important factors in gastric emptying. Cannon also in spite of the great importance he ascribed to the chemical control of the pylorus concluded that the addition of hard particles to the food causes a delay in emptying.

The author describes two types of pyloric closure. The first is the closure maintained by the pyloric tone when the pressure on either side of the sphincter is not sufficient to overcome it. It is overcome,

on the one hand, by each advancing gastric wave, and, on the other hand, may be overcome by retrograde peristalsis in the duodenum resulting in intestinal regurgitation. The second type of closure occurs when each peristaltic wave reaches the sphincter and after it has propelled chyme into the duodenum. This closure effectually prevents regurgitation and always occupies the same proportion of time in the gastric cycle.

ANTHONY F. SAVA, M.D.

Assmann, H. Gastric Neuroses in the Roentgen Picture. *Acta radiol*, 1926, 11, 83.

In nervous conditions involving the stomach such as hysteria, tabetic crises, tetany, and hematemesis, roentgen examination often reveals striking variations from the normal in the gastric tonus and peristalsis and, closely related to these, the shape of the stomach, the emptying time, and the condition of the muscularis mucosae.

In some instances changes due to increased tonus of either the vagus or the sympathetic nerve are found, but in the majority of cases the changes are the result of disturbances in both of the antagonistic nerves. There may be also in such cases decided oscillations in nervous stability toward either side.

As the variation in the findings is characteristic of nervous disturbances, repeated observations will prevent confusion of the condition with an organic disease which it may resemble during a single examination.

Cole, L. G. The Etiology of Gastric Ulcer. *Acta radiol*, 1926, 11, 303.

The sulcus angularis is a mucosal apron that hangs down or projects about one third the way across the lumen of the stomach between the corpus and the pyloric canal.

As it is a functional contraction rather than an organic fold it is not easily studied at operation or autopsy. It may be observed fluoroscopically or in single films, but is best studied in serial roentgen pictures made with the patient in the erect position after the administration of barium suspended in a fluid menstruum.

This apron like fold of mucosa is attached to the lesser curvature at the point where Aschoff says the blood supply is already taxed to its limit. At this area, about 4 sq cm of mucosa are supplied with blood by about 1 sq cm of gastric wall.

The cramping of the blood vessels which, according to Bergmann's spasmogenic theory, is an important cause of gastric ulcer is a constant factor in this long apron like fold, whether or not the stomach is in a state of spasm.

There are four types of gastric spasm, each of which the author describes briefly. All of the peristaltic sulci except the sulcus angularis relax during diastole and move from one area to another during each gastric cycle. The sulcus angularis 'marks time' during systole and does not relax during diastole. Therefore the blood vessels in this region

of the sulcu are linked during diastole as well as during systole and in addition to the diminished blood supply of Aschoff there is also the kinking of Bergmann

The concentrated digestive secretions of the peptic glands follow the rugae from the fundus and impinge on the proximal surface of the sulcus angularis which deflects them into the chyme in the sinus of Forssell. The proximal surface of the fold is therefore subjected to the strongest gastric secretions before they are diluted by the chyme.

Trauma particularly the trauma associated with vomiting referred to by Virchow is greatest on the proximal surface of this mucosal fold since it is pressed against the pyloric canal which according to Klee is closed during the act of vomiting.

The mechanical trauma produced by the gastroscope the stomach tube and particularly the string employed in the string test for the diagnosis of gastric ulcer are to be avoided.

Infection may be a factor in the etiology of gastric ulcer but alone it causes only a temporary ulcer which heals rapidly.

The sulcus angularis is particularly susceptible to the anæmic areas of Aschoff the spasm of Bergmann the trauma of Virchow and the infections of Moskowitz Konjetzny and Roschow and is worthy of serious consideration as a factor in the etiology and pathogenesis of gastric ulcer.

**Wolfer J A** Chronic Ulcer of the Stomach. Its Experimental Production and Its Effect on Gastric Secretion and Motility. *Ann Surg* 19 6 LVIII 89

In an endeavor to determine whether peptic ulcer *per se* causes any change in the secretory and motor response of the stomach the author carried out a series of experiments on dogs. In the past research workers have been unable to produce an ulcer in the dog's stomach unless the animal was in a cachectic state or there was a gross interference with anatomical or physiological conditions. The author found however that exposure of the mucosa of the stomach to 110 kv 5 ma X-ray irradiation always resulted in the production of a lesion having many of the gross characteristics of peptic ulcer in man.

Wolfer studied seven dogs for several months to determine the gastric secretory response to a standard test meal and the emptying time of the stomach after the ingestion of a standard barium meal. He then produced an ulcer in the stomachs of these dogs and studied its effect.

It was found that when the experimental ulcer was placed on the posterior wall of the stomach near the lesser curvature 2 in from the pylorus there was no demonstrable change in the secretory response or the emptying time of the stomach and when the ulcer was placed on the posterior wall near the lesser curvature 1 in from the pylorus the secretory response remained unchanged but the emptying was distinctly delayed. The author attributes this delay to pylorospasm due to involve-

ment of the local intrinsic nervous mechanism by the ulcer placed close to the pylorus.

**Manuilow A I** The Effect of Bile on the Function of the Gastric Glands in the Dog After Cholecystogastrostomy (Der Einfluss der Galle auf die Funktion der Magendrüsen beim Hunde nach Cholecystogastrostomie). *Ka an mid J* 1925 XXI 10 9

In a dog with a Heidenhain Pawlow 'small stomach' in which a fistula was formed between the stomach and the gall bladder it was found that the gastric secretion particularly the secretion of hydrochloric acid was increased by the feeding of meat and fat and decreased by the feeding of bread and milk. The digestive strength of the gastric secretion was reduced by both feedings.

At autopsy the gastric mucous membrane appeared unaltered but the gall bladder was distended its mucous membrane was found to be altered microscopically and the epithelium was pale and anæmic. Within the gall bladder there were several foreign bodies which must have come from the stomach.

DEIN (Z)

**De Takats G** The Perverted Physiology of the Stomach After Gastric Operations. *Am J M Sc* 1926 CLVII 45

De Takats reviews a large series of cases from the standpoint of gastric function after the most frequently performed gastric operations especially gastrectomy and partial gastrectomy.

In 274 cases in which gastrectomy was performed the operation was followed by complete relief in 50 per cent fair results in 22 per cent and poor results or recurrence of the symptoms in 8 per cent. The cases were followed up with X-ray examinations and chemical analyses of the stomach contents. There was no reduction in the gastric acidity.

Of 200 cases of partial gastrectomy good results were obtained in 84 per cent fair results in only 10 per cent and poor results in only 6 per cent. The free hydrochloric acid was lowered on the average from 30 points to 2 points while the total acidity was lowered from 56 points to 15 points. The functional results were therefore much better than in the cases in which gastrectomy was done.

The mortality of resection compared favorably with that of anastomosis. This operation eliminates the danger of malignancy on the basis of ulcer and of ulcer perforation and hæmorrhage. In the author's series of cases 25 per cent of the gastric ulcers showed histological evidence of cancer.

HARRY W FINE MD

**Mout T B** Two Cases of Stricture of the Bowel by Misplaced Endometrial Tissue. *Brit J Surg* 19 6 LVI 6

While grafts of true endometrial tissue appear to be derived from the uterine and tubal mucosa very similar glandular inclusions may result in certain

situations from developmental abnormalities of certain embryological structures or from metaplasia of the serous lining of the abdominal cavity or of the epithelial covering of the ovary in inflammatory lesions of these structures

The following classification includes all possible varieties of the condition

1 Direct or primary endometriosis i.e. misplaced endometrial tissue in the uterine wall due to the direct invasion of the myometrium by the mucosa lining the uterine cavity, causing the adenomyoma of mucosal origin. A similar condition occurs in the wall of the tube from the invasion of the tubal mucosa

2 Peritoneal or implantation endometriosis. In this condition there are found scattered through the pelvis implantation like deposits of endometrial tissue similar in their distribution to the peritoneal implantations of cancer and often invading the underlying structures

3 Transplantation endometriosis in which endometrial tissue occurs in the scar of the abdominal incision after an operation on the pelvic organs

4 Metastatic endometriosis. This condition includes extraperitoneal endometrial tissue in situations similar to those of metastases from cancer of the pelvic organs

5 Developmentally misplaced endometrial tissue

The author cites two cases of peritoneal or implantation endometriosis and discusses the etiology, symptoms and treatment. SAMUEL KAHN, M.D.

Adams J. E. Duodenal Ileus. *Brit J Surg* 19 6 xiv, 67

The author reports cases of duodenal ileus and draws the following conclusions

Chronic duodenal ileus may be due to compression of the fourth part of the duodenum by the superior mesenteric vessels and the drag of the mesentery

It may be secondary to gastroparesis alone

It is doubtful how far it is a manifestation of general visceroparesis, but the latter condition may be responsible for it

The dilatation of the duodenum may affect primarily either the first or the third part of the duodenum

The appropriate treatment in most cases is duodenojejunostomy, but in a few cases there is such a pronounced kink at the juncture of the first two parts of the duodenum that gastroenterostomy is likely to give the best results

SAMUEL KAHN, M.D.

Higgins C. C. Chronic Duodenal Ileus with a Report of Fifty Six Cases. *Arch Surg* 19 6 xiii, 1

The relationship between acute dilatation of the stomach and obstruction of the duodenum due to compression by the root of the mesentery has become recognized in recent years, but the clinical and

pathological manifestations of chronic obstruction of the duodenum have received little attention. In considering the etiology of dilatation of the duodenum it should be borne in mind that any or all of the duodenum may be involved. Four possible causes are (1) congenital anomalies, (2) factors favoring the formation of adhesions, (3) factors favoring compression of the duodenum, and (4) factors favoring a pelvic position of the intestines

The symptoms depend upon the degree of the obstruction. Complete obstruction is often associated with acute dilatation of the stomach. From twelve to seventy-two hours after an operation the patient becomes nauseated, the abdomen becomes distended and large quantities of bile stained fluid are vomited. Complaint may be made also of epigastric pain or discomfort. The pulse and respiration increase, prostration and anhydremia ensue and death results

In the majority of cases of chronic duodenal ileus the obstruction is incomplete and the attacks of distress simulate those of gall bladder infection or gastric ulcer. The attacks are often associated with intense headache. The headache is alleviated by the vomiting. A diagnosis of migraine is often made. At first there may be intervals of freedom from symptoms but later the trouble is continuous. Anæmia and weakness with malaise and toxic symptoms gradually develop. In obstruction of the first portion of the duodenum the symptoms are similar to those of pyloric obstruction. There may be jaundice and pain over the gall bladder. The correct diagnosis is seldom made in these cases until an exploratory operation is performed

The non-operative management consists in postural treatment (i.e. the knee chest position or lying on the abdomen or the right side to relieve the strain upon the mesentery), duodenal lavage, a high caloric diet, the wearing of an abdominal corset, and exercises to strengthen the abdominal wall

The operative treatment is duodenojejunostomy. This has given uniformly good results

HARRY W. FINK, M.D.

Wheeler Sir W. I. de C. Multiple Polypi of the Colon. *Brit J Surg* 19 6 xiv, 58

Polypsis of the intestinal tract is not as rare as was formerly supposed. The relative frequency of polypi in the rectum is probably more imaginary than real since the ease of diagnosis in the rectum is in sharp contrast to the difficulties encountered when other portions of the alimentary canal are invaded

There is a close association between ulcerative colitis and polyposis. Ulcerative colitis occurs in children as well as in adults

In the majority of cases polyposis sooner or later becomes malignant

Polyposis of the colon in early life may result in a condition of infantilism

Polyposis of the colon cannot be diagnosed unless the polypi are seen or felt. Satisfactory X-ray and

proctoscopic examinations are possible only in a certain percentage of cases

When multiple polypi of a very diffuse nature are present in the colon there is a characteristic infiltration and loss of flexibility in the colonic walls. The increase in the weight of the colon is very striking.

The prognosis is usually unfavorable unless colectomy is performed but ileostomy, caecostomy or appendicostomy followed by irrigation may sometimes be successful.

SAUEL KAHN, M.D.

**Courboules and Sauçé.** A Case of Acute Appendicitis with a Slow Pulse and Complete Inversion of the Abdominal Viscera (Sur un cas d'appendicite aigue avec pouls ralenti et inversion totale des organes) *Bull. et mem. Soc. nat. de chir.* 1926 lii 122

The authors report a case of inversion of the viscera in which the condition was recognized when the patient entered military school. When the patient suddenly developed pain in the left iliac fossa with nausea and vomiting a diagnosis of appendicitis was made. The evolution of the abdominal symptoms and physical findings (with the exception of the pulse) was typical up to the time operation was performed thirty-eight hours later. The operation was delayed because of symptoms of meningeal irritation.

The pulse normally varied between 65 and 80 but during the illness fell from 44 the first day to 34 on the tenth postoperative day. A small hematoma then appeared and the pulse rose to 80 but it soon fell again to 70. The temperature, which was normal during the acute stage, became slightly subnormal during the period of convalescence.

This report adds another case to the long series of cases of acute abdominal conditions in which the pulse was entirely out of accord with the other symptoms.

ALBERT F. DE GROOT, M.D.

**Boas.** I. Chronic Appendicitis from the Standpoint of the Internist (Die chronische Appendicitis vom Standpunkt des Internisten) *Verhandl. d. Ges. f. Verdaunungs- u. Stuhlkrankh.* 1926 p. 192-219

As chronic appendicitis does not have a truly characteristic disease picture the diagnosis is uncertain. In every case of chronic appendicitis however there has been a preceding acute attack.

Adhesions do not play as important a role in the sequelae of appendectomy as is often asserted. A large number of persons who have been subjected to appendectomy are suffering from a disease condition of the caecum which was present alone or combined with inflammation of the appendix before the operation. A close relationship between the caecum and the appendix cannot be denied and in pathological conditions the two organs have such a definite symbiosis that from the biological as well as the clinical standpoint it is an error to consider them separately. For this reason the clinical picture of chronic appendicitis is not well defined.

The author ascribes little importance to points of tenderness to pressure since variations in the position of the caecum and appendix may lead to serious error in a diagnosis based on such findings. When there is hyperalgesia of the skin the demonstration of tenderness to pressure is difficult as hyperalgesia of the skin may occur alone or in association with appendicitis. In such cases the diagnosis is facilitated by the use of Bier's suction cups. If the hyperesthetic zone is brought into a condition of hyperemia twice daily for periods of half an hour for three or four days the hyperalgesia of the skin disappears while any deep tenderness remains. By this simple method the author has been able to rule out a large number of cases of pseudo-appendicitis. On the other hand, after the removal of the cutaneous hypersensitivity a clearer conception may be gained as to the presence of an inflammatory condition in the region of the appendix. The author ascribes particular importance to a circumscribed painful point in the vicinity of the attachment of the appendix in cases of so-called appendicular colic.

A further question discussed is whether the absence of a tender point at or in the vicinity of the attachment of the appendix in the caecum excludes the presence of chronic appendicitis. The author answers this question in the negative. He then denies with emphasis the claim that even in a large majority of normal persons tenderness is demonstrable over McBurney's point or other points. This is possible only when the region of the appendix is palpated roughly. Palpatory demonstration of the appendix itself is purely a coincidence; it is of no practical value in diagnosis.

Slight variations in the temperature are of some significance. There may be transitory elevations of temperature due to acute exacerbations of a chronic inflammation or there may be a continuous mild fever. In the latter condition judgment must be cautious since the cause of the fever may lie in some other organ. In the author's opinion the functional testing of the motility of the appendix by means of the roentgen ray will ultimately prove to be a method of diagnosing chronic appendicitis superior to all other procedures.

With regard to the differential diagnosis Boas calls attention to the fact that a latent and not well developed inguinal hernia may simulate chronic appendicitis. He has permanently relieved the symptoms in such cases by having the patient wear a truss.

The question as to whether there is any effective internal (non-surgical) treatment of appendicitis must be answered in the negative so far as organic changes in the appendix are concerned. However many surgical operations are merely a sort of test treatment. There are also instances of psychogenic cures of appendicitis. The author calls attention to the fact that in recent years the serious sequelae following appendectomy in cases of pseudo-appendicitis have been discussed by many distinguished surgeons.

Only after the appendix has been removed do we stand again upon a firm therapeutic foundation. Doubtless from this point of view we must count on an occasional unnecessary removal of the appendix.

However it is better occasionally to sacrifice a normal appendix than continually to grope about in diagnostic and therapeutic uncertainty.

Appendectomy is indicated also in cases of constantly recurring appendicular colic and is recommended for patients with recurring attacks of pain in the cæcum or appendix in whose families there have been several cases of severe appendicitis. It appears to the author that the great hesitancy and the doubting attitude of many surgeons with regard to the disease picture of chronic appendicitis which extends to the placing of indications for operative interference overreaches the mark. COLLEY (Z)

#### Deaver J B External Faecal Fistula Following Appendicitis *Ann Surg* 1926 LXXXII 78

The formation of a faecal fistula after acute appendicitis is most common in cases in which drainage has been used, pressure necrosis from drains being the most constant factor responsible. Occasionally, however, a fistula follows the spontaneous rupture of an appendiceal abscess.

There seems to be a special tendency for fistula to develop in cases in which the appendix is perforated close to the cæcum. This tendency is due no doubt to the difficulty in inverting the appendiceal stump and the friability of the tissues which must be used for re-enforcement.

Of 655 cases of acute appendicitis treated at the Lankenau Hospital Philadelphia, a faecal fistula developed in 5 per cent. In 39 per cent it healed spontaneously, in 49 per cent it was operated upon, and in 30 per cent the patient refused operation or was told to return later.

The local and general results of a faecal fistula depend upon the distance of the fistula from the stomach and the amount of intestinal contents that escapes. As they cause death from inanition, fistulae high up require operation earlier than those lower down.

As a preventive measure, gauze drains should be removed with the greatest care and the cavity flushed with normal salt solution to soften the secretions.

In suppurative cases drains are essential. In extreme cases the wound should be packed open even though hernia may result. In cases of suppurative appendicitis with ulceration angulation and adhesion, the operation should be supplemented by an ileocolostomy above the affected bowel. This will usually prevent intestinal obstruction or the formation of a faecal fistula. If a fistula does occur after this procedure it may close spontaneously.

Nearly all mixed fistulae require operation, and a small percentage require two or more operations for their closure. Experience has shown that when a fistulous opening is surrounded by granulation tis-

sue neither suturing nor the packing of the sinus with gauze is of any avail.

The author allows time for spontaneous closure. In 55 per cent of his cases closure was obtained by inverting the fistula and using a re-enforcing purse string suture. In 15 per cent an ileocolostomy was necessary because the lumen of the bowel did not allow the passage of the usual faecal stream. In 23 per cent there was so much ulceration about the fistula that resection of the bowel and ileocolostomy were necessary. IART G GARSIDE M D

#### Brisset Neoplasm of the Transverse Colon Extirpation of the Neoplasm and of the Adhering Greater Curvature of the Stomach *en Bloc* Cure (Néoplasme du transverse moyen, extirpation en un temps et en bloc du néoplasme et de la grande courbure adhérente guérison) *Bull et mem Soc nat de chir* 19 6 lu 142

A woman of 37 years was operated upon for what was believed to be a tuberculoma of the transverse colon. The findings at operation confirmed this diagnosis. The tumor was the size of an orange and adherent anteriorly to the abdominal wall, below with several coils of the small intestine and above with the stomach. The adhesions to the abdominal wall and small intestine could be separated without great difficulty, but those to the stomach necessitated the removal of the greater curvature by transverse section *en bloc* with the tumor. The colon was closed by end to end anastomosis.

The true nature of the mass, which was a carcinoma of variable structure—alveolar, colloid, and scirrhous—was revealed only by microscopic examination.

In the ten months since the operation the patient has remained well. ALBERT F DE GROAT, M D

#### Monsarrat R W High or Third Degree Prolapse of the Rectum *Brit J Surg* 1926, xiv 89

High or third degree prolapse of the rectum is a true invagination beginning at the juncture of the pelvic colon and the rectum. In certain cases it appears to have some relation to anal spasm. Such a prolapse may occur as an acute condition causing symptoms of obstruction necessitating an emergency operation.

Anatomically, it is a turning in of the rectum into itself, beginning at the upper end.

As a chronic condition, its main symptoms are discomfort and difficulty in defaecation, a peculiar rectal pain described as paralyzing, and the evacuation of mucus and blood.

It must be differentiated from carcinoma and mucous colitis. Its clinical course is distinguished from that of carcinoma by its intermittency. Instead of the daily small stools with mucus and blood which are characteristic of cancerous ulceration there are intervals of complete freedom from discomfort which may extend over many months. To exclude mucous colitis, sigmoidoscopic examination is essential.

SAMUEL KAHN, M D

**Lockhart Mummery J P. Two Hundred Cases of Cancer of the Rectum Treated by Perineal Excision.** *Brit J Surg* 1926 xiv 110

This article is a report of the results obtained in 200 consecutive cases of perineal resection of the rectum for cancer. Cases in which the growth was situated at or above the rectosigmoidal juncture were not included in the series as they were dealt with by the abdominoperineal operation. The largest number of the patients was between 45 and 60 years of age and the next largest number between 60 and 65 years. One hundred and twenty three were males.

The most important predisposing cause of the disease apart from age is the presence of simple adenomata in the bowel. One malignant tumor inhibits the development of another primary growth. An adenoma of the rectum is a definite precancerous condition to be dealt with as such.

The operation for the removal of rectal cancer has passed through four periods. During the first period surgery removed the growth by splitting up the rectum and dissecting out the growth. The second period was that of Kraske's operation in which an incision was made over the rectum from behind and part of the sacrum was removed. Both of these methods were applicable to only a few selected cases and their results were almost invariably poor since serious sepsis was inevitable. The abdominoperineal operation which marked the next period was the first great advance in the surgery of rectal cancer and a decided improvement over previous procedures. It met two important requirements viz. free removal of the growth and surrounding tissues and a technique which made it possible to eliminate sepsis. The perineal operation should become the method of choice for all cases of true rectal cancer.

The difference between the amount of tissue removed by this operation and that removed by the abdominoperineal route is very slight. A few more of the secondary glands in the base of attachment in the mesorectum and rather more of the pelvic peritoneum can be removed by the abdominal route but it is very doubtful if recurrence can be avoided when once these secondary glands have become involved. The few more inches of pelvic colon that are re-ected by the abdominal route probably make no difference as regards recurrence since it is now known that spread along the bowel itself is very unusual beyond the immediate limits of the growth.

The operation is done in two stages a permanent colostomy being performed either a week beforehand or at the time of the resection. Either spinal or regional anesthesia is used and supplemented by nitrous oxide and oxygen or twilight sleep. The patient is placed in the semi prone position head down and if a male a catheter is tied into the bladder. The anus is first closed with a pursestring suture passed subcutaneously with a curved needle and an incision is made from the base of the sacrum

passing around the anus and about 1 in. from it. The coccyx is removed by dissection and the deep fascia is divided transversely just in front of the sacrum. Both levatores ani muscles are divided close to the pelvic wall with scissors and the rectum is then dissected off the vagina in the female or from the urethra and prostate in the male until the peritoneum is reached.

The peritoneum is opened and as much bowel drawn down as possible. The mesorectum is clamped off as far back as can be managed and divided. The clamps are tied off and after the peritoneal coat of the pelvic colon has been divided and stripped back for a short distance the bowel is crushed and divided with a cautery. The stump is ligatured and turned in with a pursestring suture and the wound in the peritoneum closed with catgut stitches. The wound itself is usually closed without drainage but in a few cases a small rubber wick is inserted.

The wound is not dressed for forty eight hours. At the end of that time the blades of a pair of dressing forceps are introduced between two of the stitches and any accumulated fluid is allowed to escape. The patient is allowed out of bed on the fourteenth day and is generally able to return home after from three weeks to a month.

In 100 of the author's private cases there were three deaths a mortality of only 3 per cent while in 100 hospital cases there were fourteen deaths a mortality of 14 per cent. The very marked difference between the mortality in private and hospital cases was due to better nursing, and better general conditions and recuperative powers in the former. Of the three deaths which occurred in the private cases two were due to heart failure and one was the result of chronic sepsis.

The figures given show that when the operation is performed under the most favorable conditions the mortality is only 3 per cent and the incidence of five year cure is 50 per cent. This compares most favorably with the statistics for cancer of the breast and other organs. MORRIS H. KAHN, M.D.

**Cuneo B and Bloch J C. Resection of the Rectum in the Female.** (*Contribution à l'étude de l'amputation du rectum chez la femme*). *J de chir* 1926 xxxv 59

Cuneo and Bloch describe the anatomy of the female pelvis with special regard to the lymphatics and conclude that removal of the rectum in the female for carcinoma should be supplemented by hysterectomy and colectomy. The two stage operation is the procedure of choice. In the first stage the intestine is divided well above the lesion and the lower end is securely closed inverted and dropped back into the abdomen. The upper end is then brought through the skin according to a technique described by Cuneo in 1913. The artificial anus is usually opened on the sixth day and the radical operation performed from fifteen days to three weeks later. The rectal excision is delayed until the iliac anus is continent. The authors have

devised a simple light aluminum apparatus to keep the lips of the iliac anus together.

The excision of the rectum may be done either by the perineal, abdominal, or combined route. Several excellent illustrations of the routes are included in the article. It is frequently difficult to determine beforehand which route will be best. In the authors' opinion the abdominal route is easiest, but unfortunately it is feasible only when the cancer is high up in the rectum. When the growth is low down, it is never easy and frequently is impossible. Moreover, when the patient is fat or debilitated, the abdominal invasion may not be well tolerated and the Trendelenburg position is often contra-indicated.

The perineal operation is more difficult and requires a very exact knowledge of the anatomical relations, but is less apt to cause shock and is the procedure of choice when the patient is fat and the neoplasm lies in the lower part of the rectum.

The combined operation is indicated when the pelvis is very deep and the mass very low and it is impossible to remove the mass through the abdomen and the upper part of the rectum through the perineum. It may be indicated also when the tumor is high up but has a very short mesentery.

The pre-operative preparation consists in the subcutaneous administration of 500 ccm of serum daily for three or four days preceding the intervention, the use of digitalis for several days to support the heart and rectal lavage. At the time of the operation the artificial anus is sealed over to prevent contamination of the operative field.

The abdominal operation which is a combined Wertheim and Hartmann procedure, consists briefly in separation of the anterior surface of the uterus and vagina after liberation of the ureters, separation of the peritoneal attachments and exposure of the lateral and posterior surfaces of the rectum and section of the rectum and vagina as far down as possible with the establishment of vaginal or perineal drainage. It is divided into four steps.

#### ABDOMINAL OPERATION

**Step 1** Under spinal anesthesia a median laparotomy incision is made, the suspensory ligaments of the ovaries and the round ligaments are tied and cut, the vesico-uterine peritoneal sheet is cut and the vagina and uterus are separated from the bladder as far down as possible. The ureters are then isolated and the uterine and vaginal vessels are tied and cut.

**Step 2** The rectal stump is liberated carefully from any adhesions that may be present and the rectum is separated from the parietes. The incision in the ovarian suspensory ligaments is then continued backward alongside the rectum, an attempt being made to save as much as possible of the peritoneum for future use. The sigmoid vessels are cut close to the intestinal wall in order not to endanger the blood supply of the artificial anus. The hemorrhoidal vessels are divided through their main di-

visions as the middle and superior hemorrhoids. The rectum and vagina are now lying free in the pelvis and attached only inferiorly to the perineum.

**Step 3** The vagina and rectum are separated from each other, clamped, divided, and removed from the pelvis.

**Step 4** A drain and three gauze packs are placed in the vagina and the peritoneum is sewed carefully over the pelvic floor. If it is feared that the pelvis may become contaminated from the vagina, the vagina is sutured and gauze packing is placed in the pelvis to be removed later through a perineal incision. The abdomen is closed tight without drainage.

The gauze and drain are removed on the fourth day and thereafter until the vagina cicatrizes in, the pelvis is douché. The heart is supported throughout the postoperative period by strychnine and digitalis. On about the fourth day peristalsis is stimulated by the exhibition of atropine combined with small doses of morphine.

#### PERINEAL OPERATION

The perineal operation is a combined colpohysterectomy with resection of the rectum. The patient is placed in the lithotomy position, the operative region well iodized and the anus closed with a pursestring suture. The procedure is divided into six steps.

**Step 1** The incision is made according to the type of case. Two incisions are described. The first, which is indicated when the neoplasm is in the ampulla and the anus is not involved is passed first through the two ischial tuberosities with a slight convexity toward the vaginal introitus. The dissection is then made upward in the space between the vagina and the anus for a distance of 2 or 3 cm and two longitudinal incisions slightly curved medially are made from the posterior border of the transverse incision backward, one on either side of the anus, and brought together on the posterior surface of the coccyx. The ischio-rectal fossæ are thus opened up and the lateral surfaces of the rectum exposed. The inferior hemorrhoidal vessels are cut and tied. The coccyx is then resected and the posterior surface of the rectum exposed. The hysterectomy is then performed. The inferior wall of the introitus and vagina is incised in the midline to the depth at which it was at first separated from the anus, and then, with a pair of scissors the vaginal wall is encircled, with care to keep away from the urethral orifice. In this way the vagina is separated from the introitus. The anterior and posterior walls of the vagina are grasped with several strong forceps so that traction may be exerted upon them during the rest of the hysterectomy.

The second type of incision, which is indicated when the neoplasm is low down in the rectum and the anus is involved is made around the two orifices of the anus and vagina with care to keep away from the urethra. The vagina and anus are then isolated as described.



Step 2 The anterior surface of the vagina is exposed. This is facilitated by traction on the forceps. The plane of cleavage between the bladder and vagina is followed upward to the vesicovaginal fold of peritoneum and the ureters are identified.

Step 3 The vagina and rectum are then liberated in one piece from the lateral walls of the pelvis. The vaginal artery, the uterine artery, at some distance from the uterus, and the middle hemorrhoidal artery are ligated. Throughout this procedure the ureter is kept in view.

Step 4 The uterus is freed. Up to this point the peritoneum has not been invaded. The peritoneum is now sectioned in front of the uterus and the fundus of the organ is seized with a pair of long forceps, the bladder being held away from the field by a large retractor. The adneta are then brought down and the ovarian suspensory ligaments and round ligament are cut and tied. The peritoneal incision is then extended to the lateral walls of the rectum and the uterus drawn out of the pelvis.

Step 5 The invaginated colic stump is brought down and its vascular supply and peritoneum are sectioned and tied close to the wall until the rectum proper is reached. The pelvic mesocolon is then divided and the superior hemorrhoidal vessels are cut and ligated. The rectum, uterus and vagina are now free and may be removed from the pelvis.

Step 6 Peritonization is accomplished by bringing the peritoneum from the superior surface of the bladder back to the two sheets coming from the side walls of the pelvis to either side of the old rectal bed. A Mikulicz tampon is placed in the pelvis.

No mention is made of a skin suture of any sort. The gauze tampon is removed on the fourth day, but the sac itself is allowed to remain until the ninth or tenth day. The cavity may be washed out with iodized water and a violorm pack may be placed in it daily. The wound cicatrizes in from six to eight weeks.

The combined methods are discussed only briefly as they are merely separate steps of the two techniques described and are indicated when the surgeon experiences difficulty in the others. The authors insist that a knowledge of both techniques is necessary for good work. MICHAEL L. MASON, M.D.

#### LIVER GALL BLADDER PANCREAS AND SPLEEN

Hansen S. Congenital Atresia of the Biliary Tract with Special Reference to the Etiology of the Condition. (Über die angeborene Atresie der Gallenwege mit besonderer Berücksichtigung der Ätiologie der Krankheit.) *Hosp. Tid.* 1926, livr. 7.

While congenital total absence of the gall bladder is occasionally found at autopsy in cases in which its clinical diagnosis was impossible, total atresia of the biliary tract means complete failure of liver function which can be tolerated for only a limited period of time. The condition has been found in

children who have lived for only a few days or at the most a few weeks and in whom the chief clinical sign was total absence of bile in the intestine. The 100 cases reported in the literature were so diverse that it is difficult to recognize from them the nature or the etiology of the condition. The following case is reported.

A six weeks-old female child entered the clinic with congenital icterus and debility. The parents and a 3 year old sister were well. The child was born three weeks prematurely and at birth was distinctly icteric. After its birth the jaundice diminished temporarily, but during the last few days it had increased. The child was breast fed but had vomited everything ingested in the last twenty-four hours. There were no convulsions. The temperature at the time of the patient's admission was 36.5 degrees C. and in the evening rose to 38 degrees.

The child appeared to be well nourished but was markedly icteric and coarse râles were heard over both lungs. The abdomen was somewhat distended and the liver extended to the umbilicus. There was no ascites. The urine was decreased in amount and contained biliary pigment but no albumin or sugar. One stool was clay colored and fatty and another very bloody. Death occurred on the following day. The clinical diagnosis was icterus, intumescencia hepatis, bronchitis and enteritis.

At autopsy the body weighed 3,830 gm. No deformity or evidence of lues was found. All of the organs were bile tinged. There were no abnormal findings other than those in the liver and biliary tract. The liver was enormously enlarged and harder than normal. Its surface was coarsely granulated with deep depressions and of brownish green color with blue and yellowish white areas. There was a well defined perihepatitis particularly below the diaphragm. Cross section showed a severe cirrhosis with wide bands of fibrous tissue between which lay the nearly green liver parenchyma in small irregular islands. The blood vessels were of normal caliber but nowhere was it possible even at the hilus to pass the smallest sound into the biliary passages.

At the normal site of the gall bladder there was a furrow in the liver border but the gall bladder and biliary ducts were absent. In the duodenum there was a small papilla of Vater into which a sound could be passed for several centimeters but only the pancreatic duct could be sounded there was no common duct. In the hepatoduodenal ligament there was a cord like structure where the common duct is usually found.

On microscopic examination of the liver the chief changes were discovered in the perportal tissues. These consisted in a dense connective tissue formation and an increase in the biliary ducts. The biliary passages were in general smaller than normal lined with cuboidal well preserved epithelium and partially filled with bile. Some of them were tortuous and others straight. Many had numerous ramifications. They were surrounded by a dense round cell infiltration with only a few leucocytes.

These changes in the periportal tissues were well separated from the acini, no fibrous cords were found between the liver cells and the central veins. At the border between the acini and the connective tissue there was a row of round cells. Vascular formations were increased. The liver cells were of normal size and shape, the nuclei were well stained, and the protoplasm was homogeneous and without vacuoles. The bile capillaries were filled with bile for quite a distance, but were not distended. Necrosis and leucocytic infiltration were not to be found. The liver capsule was thickened and in several places was connected with the periportal connective tissue.

Serial sections through the lesser omentum revealed in the region normally occupied by the common duct, a cylindrical structure consisting of a nucleus of cuboidal epithelial cells with basal nuclei surrounded by a dense connective tissue with a concentrically arranged lymphocytic infiltration. A lumen could not be made out. The pathological anatomical diagnosis was cirrhosis of the liver and atresia of the biliary tract.

The cases of congenital atresia of the biliary tract reported in the literature are too diverse to be arranged in a table. They vary from simple closure of the hepatic duct or common duct alone with enlargement, shrinkage, or absence of the gall bladder to absence of all of the biliary ducts as in the author's case. Cirrhosis of the liver is a constant finding.

The clinical symptoms are often quite puzzling. The interval from birth to the appearance of the icterus may range from one day to three weeks. Late appearance of the icterus may be explained by enormous dilatation of the proximal part of the biliary passages with the retention of considerable quantities of bile in the dilated excretory channels. A constant finding is the presence of biliary pigment in the urine. In most cases the meconium is stained; the acholic feces do not appear until shortly after birth.

The viability of the infants varies with the severity of the anatomical changes.

With regard to the etiology it is at first suggested that the cause is a defective anlage of the biliary tract, an embryological error. However although in certain cases the condition is associated with other deformities, the embryological processes speak against such an explanation. An attempt to explain the condition in the same way as congenital intestinal atresia is the assumption of its origin from obliteration due to epithelial proliferation with overgrowth by mesenchyme. Investigations do not support this view. According to the most generally accepted theory, the cause is an inflammatory process in the fetus. The constant presence of cirrhosis raises the question as to whether the obliteration is primary and the cirrhosis is secondary, or whether cirrhosis associated with a cholangitis is the primary condition which leads to descending obliteration as the result of descending inflammation of the biliary tract.

In experiments on animals, ligation of the common duct showed that the production of a cirrhosis by stasis is very inconstant. Because of this fact and because cirrhosis is a constant finding in congenital atresia of the biliary passages, it seems logical to conclude that the cirrhosis is due, not to bile stasis, but to an inflammatory process in the fetus which leads to obliteration of the bile passages secondarily.

The type of infection is not known. In some cases syphilis may be responsible, but there are others in which this condition cannot be demonstrated.

In the author's case the presence of rests of the common duct in the hepatoduodenal ligament in association with definite evidence of a subsided inflammation and scar tissue formation in the surrounding regions indicated an inflammatory process in the fetus.

Luz (Z)

**Chabrol Bénard, and Bariety. A Comparative Study of the Bile Pigments, Bile Salts and Cholesterol in a Case of Fistula of the Common Duct.** (*Etude comparative des pigments des sels biliaires et de la cholestérine dans une cas de fistule du choledoque*) *Bull. et mém. Soc. méd. d'hop. de Par.* 1926 xlii 99.

In the case of a patient with a biliary fistula the authors studied the excretion of bile salts, bile pigments and cholesterol first by means of a T tube in the bile passages and later, after the external drainage had ceased and the tract had cicatrized in by means of an Einhorn tube.

They found that throughout the course of the experiment there was little variation in the amount of pigment, the lowest amount being 0.312 gm. and the highest 1.14 gm. per liter.

The amount of cholesterol was always lower than normal, averaging 0.32 gm. as against a normal of 0.60 gm. This bears out their contention that with hypercholesterinæmia due to gall stones the bile cholesterol need not be increased.

The secretion of bile salts showed an increase after the removal of the drainage tube. The biliary index 10, the relation of the bile salts to the bile pigments was about 6 during the time of drainage whereas, normally, it is about 30 or 40. As soon as the normal flow had been established, it increased to 32. This finding, the authors point out, is in accord with Schiff's law of bile secretion, viz., that the substances eliminated in the bile are again resorbed in the intestine to be returned to the liver. They believe it possible that the loss of salts by way of the tube diminished the amount available for hepatic secretion.

MICHAEL L. MASOV, M.D.

**Norris G. W., and Farley, D. L. Abscess of the Liver.** *Med. Clin. N. Am.* 1916, x 17.

Abscess of the liver is comparatively rare. In most instances it is a secondary condition. The primary lesion may be quite obscure. Most liver abscesses fall into one of two groups, solitary

abscesses caused by *Entamoeba histolytica* and multiple abscesses secondary to a point of infection within the field of drainage of the portal vein. The authors review the history and autopsy findings in a case representative of each type.

HARRY W. FINE, M.D.

**Udaondo C. B. and Lanari E. Impregnation of the kidney by Tetra Iodophenolphthalein in Two Cases of Calculous Cholecystitis (Impregnation renal por la tetrayodofenoltaleina en dos casos de colecistitis calculosa).** *Arch. argent. de enferm. d. apar. digest.* 1926 1: 678.

The authors have employed the intravenous injection of sodium tetra iodophenolphthalein in the X-ray diagnosis of more than 100 cases of gall bladder disease. In two cases there was an unusual elimination of the dye by way of the kidneys although the test had been performed in the usual way. The clinical diagnosis in these cases was cholelithiasis and cholecystography was done to confirm the clinical findings. In the roentgenograms which were made eight hours after the injection of the salt the gall bladder was visible and in addition an impregnation of the kidney on the same side was noted. The renal pelvis and calyces were demonstrated as clearly as in pyelography. The authors offer no explanation for this unusual occurrence.

WILLIAM R. MEERER, M.D.

**Guareschi A. Calculosis of the Dilated Cystic Duct (Calcolosi del dotto cistico ectasico).** *Ann. ital. di chir.* 1926 v. 289.

The patient whose case is reported in this article was a 29-year-old woman with the typical symptoms of gall stones. The gall bladder could not be palpated. When deep pressure was made there was moderate pain at a point on the external margin of the right rectus muscle at the costal arch and muscle resistance was noted. Roentgen examination showed many gall stones but they were higher up and more toward the midline than the normal site of the gall bladder.

At operation the gall bladder was found to be normal in form but somewhat decreased in size. It contained a small amount of fluid but no stones. About 1 cm. from what appeared to be the neck of the gall bladder the cystic duct was dilated to form a cyst about 3 cm. long and 1 cm. in diameter. Within the cyst there were eighty gall stones. The stones contained a large amount of calcium carbonate. The operation was followed by uneventful recovery.

The author believes that the abnormal sac full of stones was a dilatation of the cystic duct secondary to occlusion probably caused by a stone impacted in the neck of the gall bladder. According to his theory the cystic duct acted as a substitute for the gall bladder after the occlusion of the latter and as the patient had a calculous diathesis all of the conditions favoring the formation of stones were transferred to the new sac. ALFRED G. MORGAN, M.D.

**Zawadzki A. Internal Drainage of the Bile Ducts by Means of a Tube Placed in the Ampulla of Vater (Le drainage duodénal transvatalien par tube perdu dans la cholodochotomie).** *Bull. et mém. Soc. nat. de chir.* 1926 lx 130.

To avoid the inconveniences of external drainage after interventions on the bile passages (viz. loss of bile, slowness of convalescence due to persistence of the fistula, secondary narrowing of the ducts and the necessity for frequent lavage) the author has employed the method of Duval in twenty even cases. Drainage was satisfactory and in a few days the icterus disappeared and the faeces became re-colored. The tube was eliminated after periods varying from fourteen days to a year. No ill effects were observed even when the evacuation of the tube was greatly delayed.

In two cases however a secondary operation was necessary to remove the tube. In two of the author's fatal cases the drain was found displaced. In one it was doubled up in the common duct and in the other was occupying a hepatic duct. Great care must be taken to dilate the ampulla completely and to be certain that the tube has passed into the duodenum.

Of the eight deaths in the author's twenty-seven cases there was only one in which inadequate drainage could have been a contributory factor.

ALBERT F. DE GROOT, M.D.

## MISCELLANEOUS

**Stewart R. L. Retroperitoneal Cysts.** *Edinburgh M. J.* 1926 n.s. xxxii 432.

Stewart defines true retroperitoneal cysts as those which lie in the retroperitoneal fatty tissues do not arise in an adult organ such as the pancreas or kidney and are attached to the surrounding structures by areolar tissue alone.

From the standpoints of etiology and pathology cysts occurring in the retroperitoneal tissue are very closely allied to those found in the mesentery of the small intestine or the mesocolon.

The author suggests the following classification of retroperitoneal cysts:

1. Traumatic blood cysts arising from encapsulated hematomata.
2. Inflammatory tuberculous cysts arising from glandular infection.
3. Parasitic hydatid cysts usually secondary to echinococcal disease of the liver.
4. Neoplastic cysts arising from the degeneration of malignant tumors.
5. Dermoid cysts.
6. Developmental cysts.

Only developmental cysts conform to the definition of true retroperitoneal cysts.

The most frequent pathological finding in cases of developmental cysts is a simple smooth surfaced, unilocular cyst the wall of which is formed of fibrous tissue with or without a lining membrane of epithelium. The contained fluid is usually straw-colored, albuminous and of low specific gravity.

From the standpoint of etiology, developmental cysts may be classified as (a) lymphatic cysts (b) enterogenous cysts, (c) mesocolic cysts, and (d) urogenital cysts

Sequestered remnants of the developing urogenital system, more particularly of the mesonephros or wolffian body, are believed by many authorities to be the most common source of retroperitoneal cysts

In the diagnosis of these cases the history is of little value. The one constant feature is a cystic tumor which must be differentiated from such conditions as mesenteric cyst, pancreatic cyst, mucocoele of the gall bladder, cold abscess, ovarian cyst, and hydronephrosis

Great aid in the diagnosis is obtained from pyeloureterography. In the two cases reported in this article the cyst lifted up the ureter, displaced it medially, and flattened it out over its anteromedial surface with the production of an obstructive hydro-ureter and hydronephrosis. Experience has shown that ureteral obstruction is not caused by the growth of intraperitoneal tumors or cysts as such neoplasms exert pressure mainly against the expansive anterior abdominal wall rather than against the ureter lying posteriorly

A second diagnostic point is the appearance of the bismuth enema. In cases of tumor or cyst of renal origin on the right side the hepatic flexure is displaced downward. This does not occur in retroperitoneal cysts. Moreover, true retroperitoneal cysts lie lateral to the ascending colon

The treatment of retroperitoneal cysts consists in enucleation of the cyst. If complete extirpation is impracticable, some form of marsupialization and drainage should be done

The author reports in detail two cases. One was unique in that the examination of the cyst wall showed it to have the structure of a compound cystic ovarian adenoma

JACOB S. GROVE, M.D.

**Blair Bell W.** The Technique of Closure of the Laparotomy Incisions. *J. Obst. & Gynaec. Brit. Emp.* 1926 **LXXIII** 300

A large percentage of incisional herniae are due to imperfect suture of a laparotomy wound. The essential requirements, apart from asepsis, of a perfect procedure in the closure of an operative opening in the abdomen are given by the author as follows:

1. The avoidance of apertures through the sutured peritoneum

2. The prevention of intra abdominal adhesions to the back of the scar

3. The obliteration of all dead spaces

4. Overlapping closure of the aponeurosis with suitable material

5. Stay sutures that will keep the aponeurosis closed as it is sutured and which, when tied, will approximate the deeper part of the wound through out and will not cut the skin

6. Neat closure of the skin edges to secure a good cosmetic result

The method employed by Blair Bell is described in detail

SAMUEL KAHN, M.D.

# GYNECOLOGY

## UTERUS

Grégoire Béclère and Darbois. Roentgen Examination of the Uterus and Adnexa. Technique and Results (Examen radiologique de l'utérus et des annexes technique et résultats) *J de chir* 1926 LVIII 638

The intra uterine injection of lipiodol performed with the ordinary attention to asepsis and under a pressure not exceeding 30 cm Hg is harmless. Even if the lipiodol passes into the peritoneal cavity it is well tolerated. If a preliminary injection of geloscolopamin is made the injection of lipiodol is practically painless.

This procedure makes possible the roentgen examination of the uterus and adnexa. If the injection is made before the screen and if important phases are recorded by means of frontal and profile roentgenograms or better by stereorontgenograms with the use of a Potter Bucly diaphragm this method of roentgen examination permits the greatest exactness in gynecological diagnosis.

In the diagnosis of pelvic tumors it shows the exact site, form and size of the uterine cavity and whether or not a tumor is in the uterus. If the tubes are permeable it shows that the condition is not a tumor of the tube. It is of value especially in the difficult diagnosis between fibromata and cysts.

In cases of metrorrhagia it may reveal the presence of an intra uterine tumor and show exactly where an exploratory incision should be made. In the diagnosis of permeability of the tubes the injection of lipiodol under a known pressure is superior to the inflation of the tubes because it shows the permeability of each tube separately and if a tube is not permeable the site of the obstruction.

ALDREY G MORGAN M D

Cotte G and Bertrand P. Roentgen Examination of the Uterus and Tubes After the Injection of Lipiodol in Sterility and Dysmenorrhœa (Sur l'exploration radiologique de l'utérus et des trompes après injection de lipiodol dans la stérilité et la ménorrhée) *Bull Soc d'obst et de gynec de Par* 1926 LV 303

The injection of lipiodol is very much superior to the insufflation of air for the roentgen examination of the uterus and tubes because if any reflux occurs through the cervix it can be seen which is not the case with air and because it permits localization of the lesion. Several illustrative cases are cited in which the site of an occlusion of the tube was localized by means of lipiodol and overcome either by salpingostomy or the implantation of the tube in the uterus. Only a few pregnancies have occurred

after such operations but the fact that they do occur is sufficient reason for persisting in the use of the method.

It is frequently possible also by means of lipiodol injection to discover an organic cause for dysmenorrhœa in cases in which no such cause can be found on physical examination. A girl of 21 years without any sexual history suffered so severely at each menstrual period that she was obliged to stay in bed for two days. Lipiodol examination showed the left tube distended and impermeable. Operation revealed a hydrosalpinx on the left side with sclerotic ovaritis. Unilateral castration on the left side was followed by recovery.

In two other cases of dysmenorrhœa in which the examination showed ptosis of the uterus with prolapse of the tubes into the pouch of Douglas fixation of the uterus was done.

It has been objected that the examination with lipiodol shows only the condition of the tubes while it is the condition of the ovaries that is important. However if lesions of the tube are shown, operation is indicated and operation will show any lesions of the ovary that are present.

The authors have performed about fifty such examinations and in none of the cases have they noted the slightest ill effect. The examination should be performed with the strictest precautions for asepsis and the patient should stay in bed for several hours afterward. The authors believe that the danger of infecting the peritoneum with bacteria from the tubes is more theoretical than real. They have never seen the slightest rise of temperature in cases of acute or subacute adnexitis in which they have made the examination.

ALDREY G MORGAN M D

Murray H L. Myomectomy. A Report of Sixty Cases of Enucleation of Fibroids from the Non-Gravid Uterus. *J Obst & Gynec Brit Emp* 1906 XVIII 240

The author has done sixty operations for the removal of uterine fibroids by the abdominal route with preservation of the uterus. The fibroids in all cases were lying wholly or partly within the uterine wall.

Murray has found that uteri apparently mutilated by the enucleation of multiple fibroids have a power of recuperation and involution incredible to those who have not tested it. Contradictions to the conservative operation are severe anemia, the cases of women who have passed the child bearing age (unless the operation can be very simple), cases of multiple fibroids which cannot be enucleated and cases of fibroids associated with serious tubal or ovarian disease.

While degeneration should be not considered a contra indication, it may cause some technical difficulty due to the softness of the tumor and the state of the capsule. The author has never seen any complication caused by the escape of fluid from areas of liquefaction into the peritoneal cavity.

Before the enucleation, a preliminary incision should be made very definitely into each fibroid particularly the larger ones, as there is often a thin zone of condensed musculature around a fibroid and this may easily be mistaken for its periphery. Hemorrhage should cause no trouble as the vascular bundles in the capsule are resistant and can easily be brought so near the surface on the finger that forceps can be applied to them before they are severed. The cavity should be closed in layers with a continuous or mattress suture of plain catgut introduced with a round bodied needle. When sub mucous fibroids are suspected there should be no hesitancy in opening the uterine cavity.

A large percentage of the women who were operated upon have since given birth to children normally.

ALBERT W. HOLMAN, M.D.

**Dalsgaard Nielsen, T. One Hundred and Sixty Four Cases of Cancer of the Uterus (164 Fälle von Gebärmutterkrebs). Hosp Tid 1926 LVII 64**

The author reports upon 164 cases of carcinoma of the uterus which were treated in the period from 1913 to 1933. Of thirty women subjected to the Wertheim operation four had a carcinoma of the body of the uterus. Of the latter, three remained free from symptoms for eleven years. One patient died soon after the operation.

Of twenty six women with carcinoma of the cervix, seven (27 per cent) remained free from symptoms for eleven years, ten (39 per cent) died of recurrence and nine (35 per cent) died soon after the operation.

Of ninety four women with carcinoma of the cervix who were treated by irradiation (radium and the roentgen rays), 16 per cent remained free from symptoms up to three and a quarter years, 55 per cent were benefited up to three and a half years and about 30 per cent were not benefited. Of twenty one whose condition was operable, 29 per cent remained free from symptoms up to two and a half years, 62 per cent were benefited up to three and a half years and about 10 per cent were not benefited. Of seventy three whose condition was inoperable, 12 per cent remained free from symptoms up to three and a quarter years, about 52 per cent were benefited up to two and a half years and about 37 per cent were not benefited.

In inoperable cases irradiation treatment is a great advance. By this treatment it is nearly always possible to stop the hemorrhage and discharge and frequently the patient's condition is so much improved that she is able to return to her work for a considerable length of time. In some cases a cure may be obtained. Irradiation therapy is indicated also in operable carcinoma of the cervix as its re-

sults are as good as those of operation and its mortality is less than that of operation.

In carcinoma of the body of the uterus the results of operation are very good and irradiation is indicated only when operation seems inadvisable on account of the general condition. SAENGER (G)

**Holl, E. A Report on the Question of the Relationship Between the Blood Picture and the Prognosis of Irradiated Carcinoma of the Uterus (Beitrag zur Frage des Zusammenhangs zwischen Blutbild und Prognose beim bestrahlten Gebärmutterkrebs). Arch f Gynaek 1926 CXXVII, 708**

This article is based upon forty three cases of carcinoma of the cervical portion of the uterus, six cases of carcinoma of the body of the uterus, and two cases of carcinoma of the vulva. The irradiation was performed according to the Seitz Wintz method. The blood picture was examined usually before and then from eight to eleven days after both irradiations. A favorable clinical course following the primary irradiation was found to be associated with a relative and a small absolute increase in the lymphocytes or an already increased relative lymphocyte value. Following a fall of short duration immediately after the irradiation the lymphocytes in such cases increased again rapidly, their number rising beyond the normal number.

A low lymphocyte count before the irradiation, a further fall or a delayed or only slight rise after the primary irradiation was in almost every instance a sign of very poor reparative powers and an unfavorable prognosis. In the cases in which the lymphocyte value has not been recovered after six weeks an unfavorable outcome was foreseen.

The author always found, as did Bock, that following irradiation the cases which were to end favorably could be recognized as such from the erythrocyte picture as well as the lymphocyte picture. This contradiction of Naegeli's theory is explained by the fact that Naegeli based his observations upon cases that were not irradiated.

Observations in five cases with a favorable clinical course showed that subsequent flaring up of a carcinoma previously regarded as cured cannot be predicted from the blood picture. Unlike other investigators the author was unable to find that an eosinophilia indicated a tendency toward cure. The difference between the time of the increase in the lymphocytes observed by him and that reported by Bock is attributed solely to differences in the irradiation technique. BOCK (G)

#### ADNEXAL AND PERIUTERINE CONDITIONS

**Bacilli, L. Examination for Koch's Bacillus in the Blood in Tuberculous Affections of the Female Genitalia (La ricerca del bacillo di Koch nel sangue delle affezioni tubercolari genitali femminili). Riv Ital di ginec 1926 IV 539**

There is considerable discrepancy in the reports of different authors in regard to the discovery of

tubercle bacilli in the blood in tuberculosis of the female genitalia. In 1914 Bacialli began a series of examinations in which he stained blood smears by the Staebli-Schnitter method. He found acid fast bacilli in all of his cases of tuberculosis of the female genitalia. The fact prevented confirmation of his findings by animal experiments. Since in the meantime his methods were seriously criticized by De Amicis he resumed the experiments by another method two years ago. He cultivated the blood on Ietragnani's medium of milk, potato starch, peptone, egg, glycerin and malachite green and made inoculations into guinea pigs. The blood was taken from severe cases of tuberculosis of the female genitalia. The results were almost constantly negative.

Bacialli thinks the question is not yet absolutely settled and that the investigation should be continued with various techniques since the difference in the results of experiments may be due to technical errors.

ANDREW G. MORGAN, M.D.

#### Rubin I. G. Sterility Associated with Habitual Amenorrhoea Relieved by X-Ray Therapy

*Int J Obst & Gynec* 1926 vii, 16

Rubin states that habitual amenorrhoea is associated with sterility in about 5 per cent of the cases and pregnancy occurs in about 5.5 per cent of cases that are untreated.

Of twelve women with this condition whom he treated with mild doses of X-ray, nine (75 per cent) subsequently became pregnant. Only one of the latter aborted. The rest were delivered at term of normal children. The seven delivered by Rubin gave birth to six males and one female.

The X-ray irradiation of the ovaries resulted in restoration of the menses in eleven of the twelve cases of amenorrhoea. X-ray irradiation of the hypophyseal area and of the thyroid appears to give additional benefit. Hypophyseal irradiation was given in the cases of two of the women who became pregnant and two of those who did not. One of the women who became pregnant also received thyroid irradiation.

Insufflation of the tubes through the uterus and endocrine therapy increase the therapeutic action of the X-rays in amenorrhoea with sterility.

As the ovaries were found to be definitely enlarged before the treatment in eight of the nine cases in which the sterility was treated successfully, careful examination with regard to the size of the ovaries may prove of aid in the selection of the cases suitable for ovarian stimulation. When no ovarian enlargement is found, irradiation of the hypophyseal area of the thyroid may be more advisable than irradiation of the ovaries and should certainly precede it.

E. L. CORTELLI, M.D.

#### Spencer H. R. Two Cases of Adenofibroma of the Ovary

*Proc Roy Soc Med Lond* 1926 xix, Sect Obst & Gynec 105

The cases of adenofibroma of the ovary reported in this article are of interest particularly because of

the rarity of this type of tumor. Only three other cases have been reported. These also were reported by the author.

Spencer calls attention to the association of the adenofibroma with multilocular ovarian cystoma, this occurring in one of the two cases in the same ovary and in the other in the opposite ovary. Of the five cases reported to date, cystic disease of the ovary was found in four.

MAGNUS P. LUNDES, M.D.

#### Delannoy E. and Breton A. A Case of Ovarian Epithelioma of Wolffian Origin (Un cas d'épithélioma wolffien de l'ovaire)

*Bull Soc d'obst et de gynec de Par* 1926 xv, 239

A woman 55 years of age who gave a history of abortion in the second month of pregnancy at the age of 28 years and who had passed the menopause at the age of 50 sought treatment for metrorrhagia which began five months before she consulted the authors. The bleeding was profuse but not painful and was not alleviated by rest. Complaint was made also of constipation and a sense of weight in the lower abdomen. The patient had lost 8 kilos in weight and was very anæmic.

The general examination was negative. Vaginal examination revealed a smooth, very hard, regularly rounded, and slightly movable mass the size of a fist in the right fornix and cul de sac. The cervix was rather small but normal and the body of the uterus was of normal size and mobile.

As the mass was believed to be malignant, a total hysterectomy with removal of the adnexa was done. The tumor was slightly adherent in its posterior portion but there was complete absence of ascites. Apparently there were no metastases.

Pathological examination showed the growth to be a cylindrical carcinoma or a cylindrical epithelioma of the ovary.

The author believes the tumor was derived from wolffian rests.

SALVATORE DI PALMA, M.D.

### MISCELLANEOUS

#### Schroeder R. Backaches (Ueber Rückenschmerzen)

*Zentralbl f Gynaek* 1926 lvi, 447

Schroeder first reviews the various causes of the complex symptom of backache. Among the genital causes is passive mobile displacement of the uterus in the form of simple retroflexion, decubitus, or prolapse. Deep backache is often due to a chronic lymphangitis or a contracture of the sacro-uterine ligaments which latter can be recognized from the pain caused by traction on the portion and is due to wounds and erosions of the cervix.

Among the extragenital causes the author mentions affections of the kidney, pelvis and the ureter. A most important cause is strain on the lower abdomen resulting from relaxation of the abdominal wall with ptosis of the abdominal viscera. During respiration in such cases the upper part of the abdomen is drawn in while the lower portion is pushed out. The vagina is then subjected to a positive pres-

sure downward, whereas in the healthy woman in the standing position the pressure in the vagina is negative

In the treatment of such anomalies associated with easy fatigue of the muscles the patient must be given a support to lift the protruding lower abdomen. In cases of true pendulous abdomen, a firm binder is necessary. Gradually increased exercises are indicated to strengthen the abdominal and back muscles. Important preventives are modern sports and bodily exercise. The author recommends bending of the back and knees, raising the body to the sitting position from the recumbent position and the raising of both legs. Other essentials in the prevention of the condition are proper clothing and good care during the puerperium.

GUETH (F)

Newell, Q. U. The Use of Iodized Oil (Iodipin) as a Diagnostic Aid in Gynecology. *Am J Obst & Gynec* 1926 xii 189

In cases of sterility in which the tubes are obstructed the author has found injections of iodized oil of value in determining the character and loca-

tion of the obstruction and whether the case is suitable for operation.

When several masses are palpable within the pelvis, X-ray study following such injections will clearly differentiate the uterus from the other masses.

In cases in which the pelvis is blocked by one large mass, the use of iodized oil will reveal whether the tumor has its origin in the ovary or the uterus, and when a foreign body is present it will show whether the foreign body is within or outside of the uterine cavity.

The method is of value also in the differentiation of chronic appendicitis from salpingitis on the right side and of tuberculous salpingitis from common salpingitis.

It reveals the size of the uterus and shows whether the cavity is encroached upon by a mass such as a fibromyoma or a carcinoma of the fundus.

In conclusion, the author states that injections of iodized oil, carefully and skillfully done, are not likely to cause any harm.

E. L. CORNELL, M.D.



# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Hirst J C J and Long C F The Early Diagnosis of Pregnancy by Methods of Precision Further Observations on Sugar Tolerance Tests Final Report *Am J M Sc* 1926 clxxxviii 846

The authors review the various laboratory methods for the early diagnosis of pregnancy. They regard all of them as unreliable except the method of Frank and Nothmann which they have modified. In 1923 they made a preliminary report on the use of the latter method in a series of thirty-nine cases with accuracy of diagnosis in 95 per cent.

Experimental work in this field has been dominated by two ideas: (1) that pregnancy causes the appearance of a specific protein in the blood, and (2) that women in the early months of pregnancy are prone to transient glycosuria and this can be induced by the feeding of carbohydrate.

The tests based on the first theory are the Abderhalden reaction, Erde's anaphylactic reaction, Costa's novocain formalin reaction, Dienst's reaction, and the red blood corpuscle sedimentation test.

Those based on the second theory are the Roubitschek adrenalin test, the phlorizin test, and the alimentary glycosuria test of Frank and Nothmann.

The Frank and Nothmann test is based on the observation that after the feeding of 100 gm of glucose on a fasting stomach in the case of a pregnant woman glycosuria without hyperglycemia will appear within the course of two hours. This is noted with constancy only during the first three months of pregnancy and immediately disappears following the separation of the placenta from the uterine wall or the death of the fetus.

The simplified technique for the Frank and Nothmann test which is used by the authors is as follows:

1. The patient is given an average supper the night previous to the test.

2. On the day of the test the first morning specimen of urine is collected. This must be negative for sugar by Fehling's qualitative test before the glycosuria test is begun.

3. Breakfast on the day of the test is omitted.

4. The calculated dose of table sugar is given dissolved in two tumblers of water flavored with half a lemon each. The dose is computed by using 7.5 gm of table sugar for every 10 lbs of body weight except that the maximum total must not exceed 150 gm.

5. Voluntarily voided specimens of urine are collected one hour and two hours after the administration of the dose, and in the cases of patients going to operation the same day or under any nervous strain a third hour specimen is also collected.

These are tested for sugar by Fehling's qualitative method.

If either of the hourly specimens of urine shows a definite reduction of the Fehling's solution such as would be termed positive for sugar in a routine analysis, the test is considered positive.

Routine blood sugar determinations are not made because the work done by the authors in 1923 showed that this type of glycosuria is associated with normal blood sugar values.

Of 150 patients subjected to the test, eighty-eight were pregnant. Of those who were pregnant, eighty-three (94 per cent) reacted positively. Of the non-pregnant group, fifty-seven (9 per cent) reacted negatively. Despite the percentage of error, the authors believe that the procedure described is the most accurate laboratory method of diagnosing early pregnancy before the gynecological signs appear.

Patients with endocrine obesity, exophthalmic goiter, diabetes, or severe hepatic disturbances are not amenable to the test because their carbohydrate metabolism is already abnormal.

CHAIRES I. DE BOIS M.D.

Gauss C J A Probable Sign of Pregnancy (Ueber ein wahrscheinliches Schwangerschaftszeichen) *Zentralbl f Gynaek* 1926 1: 875

For many years the author has noted that in the first month of pregnancy the cervix of the uterus has an unusual mobility as compared with the body of the uterus, it being possible to move it laterally and forward and backward without moving the corpus. In making this test care must be taken not to confuse cases of early pregnancy with cases in which the mucosa of the portio is very thick and movable.

The author is aware that this peculiar mobility is due to the changes of which Hegar's asthenic compressibility is another sign. The anatomical bases of the mobility are discussed in detail.

In the isthmic portion of the human uterus there is a pseudo joint for which there are numerous possible causes. Moreover, it is evident from the arrangement of the uterine musculature that the isthmus is a relatively weak area which is particularly susceptible to the action of extra uterine forces such as the pressure of the bladder and intestines and the intra-abdominal pressure. As the result of certain changes this weakness is considerably increased.

Of 258 cases in which the author made an examination for isthmic mobility, he found it absent in only two. Whether this sign becomes more distinct with advancing pregnancy, Gauss is as yet unable to state. In early pregnancy, however, the new sign is superior to Hegar's sign, but since like the latter

it is sometimes found in the non gravid uterus, it can be regarded only as a probable sign of pregnancy

Bock (G)

**Puppel E Contributions on the Clinical Aspects of Pylitis** (Beiträge zur Klinik der Pylitis) *Monatsschr f Geburtsh u Gynaek* 19 6 LXII 274

In twenty five of fifty four cases of pyelitis the condition was found on the right side and in ten on the left side. In twelve it was bilateral. This coincides with the usual findings. There were seventeen acute cases with fever occurring with or without pregnancy and thirty seven chronic cases usually without fever but with backache pain in the region of the kidneys, cloudy urine and dribbling of urine.

Although Stoeckel does not admit the possibility of infection of the urinary passages from the vagina, the most common local cause was severe leucorrhœa. Pediatricians recognize vulvitis in small girls as the chief cause for the first appearance of pyelitis. Other causes are ascending gonorrhœa, inflammations in the true pelvis including chronic appendicitis, vaginal operations, and, in rare instances, defloration and colds.

Accordingly the author distinguishes a hæmatogenous, a stasis (in constipation), a lymphogenous and an ascending pyelitis. The duration and course of the condition vary widely.

The acute attack may be overcome by clinical treatment in two or three weeks, but this does not necessarily mean a permanent cure. Ureteral catheterization is indispensable for both diagnosis and therapeutics. It is frequently followed by a prompt fall in the temperature. Other measures to be considered are irrigation of the bladder with silver nitrate and intravenous injections of jodonascin. The use of urotropin in cases with non acid urine is without value. In none of the cases reviewed was it necessary to interrupt the pregnancy on account of the pyelitis.

The development of severe gonorrhœal and post-operative pyelitis is explained by penetration of the ureter due to the presence of infection in the bladder. The symptoms vary from attacks of high fever with severe headache, vomiting, chills, and at times severe pain at McBurney's point to simple bacteriuria. Acute cases are seldom diagnosed erroneously. The urinary findings prevent confusion of the condition with appendicitis or puerperal fever.

BRANDESS (G)

**Lazard E M Irwin J C and Yrwin J The Intravenous Magnesium Sulphate Treatment of Eclampsia** *Am J Obst & Gynec* 1926 XII 104

This report is based upon cases of toxæmia of pregnancy which resulted in convulsions and cases in which treatment was directed toward the prevention of convulsions.

There were forty five cases of toxæmia in which magnesium sulphate was given intravenously in addition to the usual pre-eclampsia treatment in an attempt to prevent the occurrence of eclampsia. In

nine, the first injection was given during labor, and in three after delivery. In thirty three, the treatment was begun from one day to four weeks before delivery. Of six patients who developed convulsions, four had had only one injection, one had had four injections and one had had three injections. Thirty had a spontaneous delivery, three, an induced labor, five, an assisted labor (forceps or version), and seven, a cesarean section. There were thirty four living babies, six premature stillbirths, and three full term stillbirths. The death of one of the full term infants was due to premature separation of the placenta.

There were 103 patients with eclampsia with one or more convulsions. In fifty, the eclampsia developed before labor in twenty five during labor, and in twenty eight after labor. The total number of deaths from all causes was fourteen, a gross mortality of 13.6 per cent. One patient recovered from the eclampsia but died three weeks later from sepsis. One died of surgical shock following section six days after recovery from eclampsia. These two cases should be included among the recoveries from eclampsia. One patient was moribund when she first came under observation, and in two the condition was proved by autopsy to be a nephritic uræmia without any typical eclamptic changes.

There were forty seven spontaneous labors, ten forceps extractions, three versions, one breech extraction, eight bag inductions, and eight cesarean sections.

The authors draw the following conclusions:

1 The intravenous administration of magnesium sulphate in sufficient dosage will prevent the development of convulsions and will control them after their onset.

2 Under intravenous magnesium sulphate treatment the corrected mortality in a series of cases of eclampsia was 9 per cent.

3 The mortality is highest in the true nephritic type.

4 Surgical interference in eclampsia should be limited to assisting labor (in the second stage) on definite obstetrical indications.

5 Cesarean section is contra-indicated in eclampsia except in the presence of absolute obstetrical indications.

E. L. CORNELL M.D.

**Schultze Rhonhof F Population Statistics with Regard to Pulmonary Tuberculosis in Pregnancy** (Bevölkerungstatistisches zur Lungentuberkulose in der Schwangerschaft) *Zentralbl f Gynaek* 19 6 I 779

In the Menge clinic it is not regarded as certain that pulmonary tuberculosis always necessitates interruption of the pregnancy. To date, the superiority of such active treatment has not been proved.

As nearly all clinical statistical reports are based on small numbers of cases the author studied the statistics from the statistical departments of Baden, Prussia and Bavaria for the years 1905 to 1922 with regard to the total mortality, the mortality from

tuberculosis of all types and the mortality of pulmonary tuberculosis according to age and sex

The mortality from pulmonary tuberculosis among females showed a definite increase in the third decade of life but the corresponding mortality among males showed a similar rise. On the other hand in the age period from birth to 15 years of age the mortality from pulmonary tuberculosis was higher among females than that among males.

With the decrease in the number of births in the period from 1905 to 1913 there occurred also a decrease in the mortality of pulmonary tuberculosis among females but this decrease occurred much more slowly than the decrease in the birth rate and a similar decrease was noted in the mortality among males. On the other hand in the period from 1914 to 1920 the mortality from tuberculosis among both males and females was opposite to the birth curve.

The author believes that these findings greatly weaken the hitherto accepted theory concerning tuberculosis in pregnancy. Following a review of the findings of Lankow and Kuepferle whose figures he does not regard as of much value he concludes that in the majority of cases pregnancy labor and the puerperium have no effect upon an already existing pulmonary tuberculosis.

ROCK (G)

**Nuernberger I.** The Problems of Injury to the Fetus by Syphilis (Zum Problem der zwischen Fruchtschädelverletzung / *Ursache f. Gyna k.* 1926 I 705)

For the recognition of all congenitally syphilitic children an immediate X ray examination of the extremities of the child is necessary in addition to examination of the retroplacental blood and blood from the umbilical cord. When syphilis is even slightly suggested by the history or the findings in the mother or child an X ray examination should be made again after eight weeks and if this proves negative a Wassermann test should be made of the mother and child. X ray examination of the child's skeleton is absolutely necessary since bony changes are not infrequently the only signs of syphilis. These include periostitis ossificans as well as osteochondritis. The absence of such bony changes however does not definitely exclude congenital syphilis.

Of 145 children in whom syphilis was suspected but who at first showed no evidence of any illness the author was able to keep thirty one under observation for several years after their birth. Of the latter six subsequently showed evidence of active syphilis and in eleven signs of latent syphilis developed six having a positive Wassermann reaction and five showing periostitis ossificans. In fourteen no sign of syphilis could be found throughout the period of observation. Latent syphilis in children frequently escapes recognition because the child often appears entirely normal and therefore no subsequent examinations are made.

With regard to previous treatment of the mother the following conclusions are drawn:

At least every other child of a syphilitic woman who is not treated for syphilis is born dead.

Of the children of 100 syphilitic women who were not treated for syphilis five will be healthy and ninety five will be syphilitic.

Of the children of 100 syphilitic women treated only before pregnancy from seven to twenty two will be healthy.

Of the children of 100 syphilitic women treated during pregnancy, from seven to twenty two will be syphilitic.

Every pregnant syphilitic woman must be treated regardless of whether the syphilis is active or latent and regardless of whether she has been treated previously. A careful course of treatment is advisable even when the Wassermann test has become negative.

HAYES (G)

**Kraul L. and Bodnar L.** The Effect of Anti Syphilis Treatment upon the Fetus (Ueber die Wirkung der antisyphilitischen Behandlung auf den Fetus) *Arch f. Gynaek.* 1926 CXVIII 238

By chemical methods the Marsh mirror test for arsenic and the micro analytical luminescence test of Donan for bismuth the authors were able to establish the presence of these elements in the blood and amniotic fluid of fetuses whose mothers had been given anti syphilis treatment during pregnancy.

They therefore concluded that anti syphilis treatment of pregnant women serves not only to protect the fetus against infection but to combat already established fetal syphilis. At no period during pregnancy is it too late to begin such treatment. The transmission of both medicaments to the fetus is believed to be brought about by the placenta.

WERNER (G)

**Klaften E.** Antisyphilis Treatment of Pregnant Women and the Prophylactic Care of the Newborn (Ueber die antisyphilitische Behandlung der Graviden und die Präventivkur der Neugeborenen) *Arch f. Gynaek.* 1926 CXVIII 31

The author studied the diagnosis and treatment of syphilis in pregnant women at the von Pöhm clinic. In this article he describes his own method of treatment and emphasizes the importance of intensive therapy begun as early as possible. Even when pregnancy is advanced such treatment may be of considerable benefit. Klaften at first used mercury and salvarsan but since the introduction of bismuth in the treatment of syphilis has employed a combination of bismuth and salvarsan. In the use of neosalvarsan he begins with an injection of 0.15 gm. and then increases to 0.3 gm. giving this dose twice a week until a total of from 4.2 to 5 gm. is reached. Severe untoward effects have never been observed following this treatment.

Of the bismuth preparations he uses chiefly bismogenol giving it intragluteally in doses of from 1 to 1½ c cm until a total of 30 c cm has been administered. Particular care is necessary only in the presence of severe kidney damage and signs of

cardiac decompensation due to organic heart or vascular disease

Prophylactic treatment of the newborn is advisable when the treatment of the mother has been insufficient. This should be begun immediately after birth, before there are any clinical signs of syphilis. The treatment consists in the administration of 1/100 gm of protopoduratum hydrargyri in milk three times a day and a deep intragluteal injection of 0.1 gm of neosalvarsan each week, continued for twelve weeks. WERNER (G)

Gill J J Report of a Case of Choriocarcinoma of the Uterus Complicating Pregnancy *Am J Obst & Gynec* 1926 xii 703

The patient whose case is reported by Gill was a woman 21 years of age who was married at the age of 18 years and had had two healthy children and no miscarriages. Her last regular menstruation occurred September 15, 1924 at which time she was in good health and weighed 135 lbs. On December 15 she had a bloody vaginal discharge. This recurred at frequent intervals for sixty days, on two occasions there was a profuse gush of blood. Other symptoms complained of at that time were a thick mucous leucorrhœa, severe pelvic pains, extreme loss of strength and weight, dyspnoea, fainting spells, and blurring of the vision.

On February 15 1925, when the patient entered the hospital, she weighed 98 lbs, the red cell count was 3,600,000 the white cell count 8,900, the hæmoglobin equaled 75 per cent, the urine was negative except for some pus cells, the temperature 100 degrees F and the abdomen very tender but not distended.

An exploratory operation performed February 16 revealed chronic inflammation of the appendix and a large, soft, boggy uterus completely studded over with tubercles varying in size from that of a pinhead to that of a pea. The tubercles did not penetrate to the peritoneum. The appendix and the unopened uterus containing a five months fetus were removed.

Examination of the uterus by Fishback showed the soft infiltrating nodules in the musculature to be choriocarcinoma.

Deep roentgen ray therapy was administered by Alden, and the patient left the hospital March 21, 1925 very greatly improved in health. One year after the operation she weighed 150 lbs was able to work, and stated that she felt stronger and better than ever before. E. L. CORNELL M.D.

## LABOR AND ITS COMPLICATIONS

Asteriades T and Mocquot P Encysted Peritonitis Following Rupture of the Uterus During Labor Delayed Laparotomy Cure (Péritonite enkystée après rupture de l'utérus au cours de l'accouchement laparotomie tardive guérison) *Bull et mém Soc nat de chir* 19 6 liu 120

A woman was delivered of a normal infant without incident except for a violent lancing pain at the

end of labor and a rather severe postpartum hemorrhage. The hemorrhage was arrested by packing. On the second day the patient developed chills and fever which continued for several days. The uterus rapidly returned to its normal size but the abdomen became progressively distended by a mass extending to within three fingerbreadths of the xiphoid process. On bimanual examination this mass could be separated from the uterus.

Operation revealed an abscess which entirely filled the pelvis. The uterus was of normal volume and the adnexa were normal. The presence of the abscess was explained by a stellate laceration of the posterior wall of the uterus of sufficient size to admit a finger tip. The abscess was opened and a Mikulicz drain introduced. Uneventful recovery resulted.

Because of the history of violent pain at the end of labor and the postpartum hemorrhage, the author concludes that this was a case of spontaneous rupture of the uterus followed by a localized peritonitis.

ALBERT F. DE GROAT M.D.

McCann F J A Contribution to the Technique of Cesarean Section *Proc Roy Soc Med*, Lond 19 6 xiv Sect Obst & Gynec 113

In the technique for cesarean section advocated by McCann the abdominal incision varies in length according to the size of the uterus. It is made sufficiently long for easy eversion of the uterus. Its position is governed by the position of the uterine fundus. The greater part of the incision is above the umbilicus.

When the abdomen has been opened, the uterus is immediately everted. The incision is then temporarily closed with volsellæ or Kocher forceps and covered with a towel wrung out in hot saline solution.

Another hot saline towel is wrapped around the everted uterus, the fundus being left exposed, and clamped by forceps along the posterior uterine wall. The lower edge of the towel is spread on the cloths protecting the skin of the abdomen to prevent the entrance into the abdominal cavity of any fluid escaping from the uterine cavity. Though liquor amni is considered an aseptic fluid, it may be irritating and the peritoneal cavity should not be contaminated by it.

When these precautions are taken and the work is done rapidly eversion does not increase the shock resulting from the operation as is generally supposed.

A sagittal fundal incision 6 or 7 in long is then made through the fundus and prolonged 1 in farther downward anteriorly than posteriorly. To assure a mesial position of this incision the ends of the fallopian tubes are used as guides. Care is taken to avoid puncturing the membranes or tearing the incision.

After the fundal incision has been made, the membranes bulge into the anterior half and the placenta is exposed through the posterior half. The

hand is then inserted and the placenta rapidly separated from the uterine wall.

While the assistant draws the sides of the uterine incision apart the operator compresses the lower part of the uterus through the towel and gently milks the uterine wall from below upward thereby shelling out the placenta and the fetus in the unopened bag of membranes. The membranes are then ruptured and the child is liberated. After the child breathes the cord is clamped and cut.

In septic cases in which the membranes have ruptured the uterus is thoroughly irrigated. As an alternative to sacrificing the uterus continuous irrigation may be maintained through a uterovaginal fistula.

Slowly absorbed or non absorbable sutures such as silk worm gut and linen thread are used for the uterine wall and catgut is employed for apposition sutures.

When the uterine incision is carefully sutured it will stand the strain of even repeated pregnancies.

MAGNUS F. URNER, M.D.

**Wille F. C.** The Course of Delivery After Cesarean Section (Ueber den Geburtsverlauf nach Kaiserschnitt). *Dtsch. med. Wchnschr.* 1916 li 569.

Extension of the indications for cesarean section is recommended because of the favorable results of this operation. To determine whether it is justified when the scar of a previous cesarean section is present the author reviewed the material from the Franz clinic from October 1, 1910 to April 1, 1925. In this period abdominal cesarean section was performed in 35, (1 per cent) of 2897 cases. The primary mortality was 1.4 per cent. There were 118 subsequent pregnancies without complications in any case.

No relationship could be determined between subsequent abortions and the scar of the operation. There were forty nine cases in which cesarean section was performed twice, nineteen cases in which it was done three times and one case in which it was done four times.

In thirty five cases delivery occurred by the natural route in nineteen of these it occurred spontaneously and in sixteen with artificial aid. There were two spontaneous and two traumatic ruptures in cases with a narrow pelvic inlet but only one death in these cases.

Overstretching of the uterus and repeated and frequent pregnancies are not associated with much danger of rupture but the author ascribes some importance to the insertion of the placenta in the region of the scar. The cause of rupture is not the particular conditions of the new pregnancy but the complications of the old cesarean section. Therefore the author emphasizes the importance of the intraperitoneal cervical section with smooth margins at the line of the incision, exact suturing, and healing by primary union—in short he urges an aseptic and technically faultless operation.

NEUGARTEN (G)

## PUERPERIUM AND ITS COMPLICATIONS

**Levy Solal Ravina Brindeau Devé and Delestre** A Metrorrhagic Form of Puerperal Infection (Forme métorragique de l'infection puerpérale). *Bull. Soc. d'obst. et de gyn. de Par.* 1926 xv 209.

LEVY SOLAL and RAVINA report five cases of secondary postpartum hemorrhage which they regard as analogous to secondary hemorrhages of infected surgical stumps, many cases of which were seen in the recent war. Of the five patients one died of septic infection.

These cases are similar to those reported by Couvelaire in the sense that the profuse bleeding seemed to be due to a streptococcus infection of the uterus independent of placental retention. Cultures of the blood were at first negative.

The treatment consisted in the introduction into the uterus of tampons saturated with streptococcus serum. The authors believe that such dressings may act both as a hemostatic and a vaccine.

Postmortem examination of the uterus in the fatal case showed infiltration of the uterine wall by inflammatory elements, interstitial hemorrhages and an extremely intense obliterating endarteritis.

Levy Solal and Ravina have formulated the following rules for treatment:

1. Abstain from curettage as this procedure may disseminate the infection.

2. After simple evacuation of any blood clots from the uterine cavity introduce tampons dipped in a filtrate of streptococcus culture.

3. If improvement is noted if the hemorrhage stops and if the temperature decreases continue the dressings.

4. If improvement is not noted after the second or third dressing perform a vaginal hysterectomy.

Similar cases are reported by BRINDEAU, DEVÉ and DELESTRE.

SALVATORE DI ALMA, M.D.

**Schneider G. H.** Two Cases of Puerperal Tetanus Following Criminal Abortion (Zwei Fälle von Tetanus puerperalis nach kriminellem Abort). *Med. Kl.* 1926 xvi 134.

In the two cases of tetanus following abortion which are reported in this article death resulted from peritonitis. One of the women died during conservative treatment with antitoxin and magnesium sulphate and the other following removal of the uterus. Bacteriological examination of the removed uterus revealed streptococci and gas bacilli but no tetanus bacilli.

In 121 similar cases collected by Schneider the mortality was 91 per cent.

DICTERICH (C)

## NEWBORN

**Wetterdal P.** The Treatment of Melena Vera Idiopathica Neonatorum (Acta obst. et gynec. Scand. 1926 iv 337).

In a study of 200 cases of melena vera idiopathica neonatorum collected from two lying in hospitals in

Stockholm, the author found that in the cases given only simple symptomatic treatment the mortality was about 50 per cent, in those treated by the injection of gelatin it was 30 per cent, in those treated by the injection of the mother's blood it was 20 per cent, and in those treated by the injection of both gelatin and the mother's blood it was about 15 per cent. In the cases of infants born at term and weighing over 2,500 gm., the corresponding mortality rates were 50, 30, 15, and 15 per cent, and the incidence of recovery in every case was 5, 12, 40, and 43 per cent.

On the basis of his findings Wetterdal recommends the immediate intramuscular injection of from 10 to 20 c cm. of the mother's blood and if the bleeding continues a repetition of this treatment or the administration of gelatin. Subnormal temperature and dehydration must also be combated.

MICHAEL L. MASON, M.D.

### MISCELLANEOUS

Falgairelle P. The Identification of the Blood Groups in Obstetrics (*L'identification des groupes sanguins en obstétrique*). *Rev. franç. de gynéc. et d'obst.*, 1926, xxi, 236.

In the author's opinion the theory of Ehrlich is applicable to blood grouping and the general rules of agglutination and lysis hold for the phenomena in blood typing. Falgairelle believes that there are only four blood types but that the presence among the four blood types of two types each of agglutinins and agglutinogens according to the scheme of Dungen and Hirschfeld, explains the mutual reaction between the different bloods.

The four groups are represented graphically as follows: Group 1, ABo; Group 2, Ab; Group 3, Ba; and Group 4, Oab. A and B represent the agglu-

tinogens and a and b the agglutinins and O and o the absence of these. When A and a are mixed agglutination results. It occurs also when B and b are mixed.

Falgairelle attributes the mistakes in grouping and the belief that there are more than four blood groups chiefly to feebleness of the agglutinin or agglutininogen and to the phenomenon of pseudo iso agglutination. Feebleness of the agglutinin or agglutininogen as a cause of error is of great importance in obstetrics as there is not only a variation in the power of the agglutinin to agglutinate but also in the susceptibility of the agglutininogen to become agglutinated and this variation is much more marked in newborn infants than in adults. In fact these powers may not develop until several months after birth. Error may be avoided by typing indirectly instead of using the direct method of testing compatibility and by employing sera with a high agglutinating power.

Pseudo iso agglutination is regarded by the author as an extremely rapid sedimentation of the red cells. This factor is also of extreme importance in obstetrics as the sedimentation time is shorter in women than in men and tends to become increasingly shorter during pregnancy up to the time of delivery. To distinguish between true and false agglutination the author has devised a simple procedure the kaolin test. To three parts of the standard sera 2 and 3, one part of a one third suspension of kaolin in normal salt solution is added. The typing is then done as usual. The kaolin suspension may be added after the corpuscles have been mixed with the sera but is best added before. All agglutination which resists this test is an iso agglutination and all agglutination which disappears under the action of the kaolin is a pseudo iso agglutination.

MICHAEL L. MASON, M.D.

# GENITO-URINARY SURGERY

## ADRENAL KIDNEY AND URETER

Bothe A E Hypernephromata *Ann Surg* 1926  
LXXIV 57

The following theories have been advanced with regard to hypernephromata

- 1 They originate in adrenal rests
- 2 They are alcoholic sarcomata with no relation to cell rests
- 3 They are endotheliomata taking origin from the endothelial lining of perivascular lymph spaces
- 4 If benign they may be classified as adenomata and if malignant as carcinomata
- 5 They develop from the endothelial cells lining the blood vascular spaces
- 6 They are derived from the epithelium lining the uriniferous tubules
- 7 They originate from islands of embryonic nephrogenic tissue

As the author has found that in the 16 mm human embryo the anlage cells of the suprarenal cortex are adjacent to the metanephros cells, he is of the opinion that the inclusion of suprarenal cells within the metanephros anlage is not at all improbable

He concludes also that tissues other than meta nephros especially those developed from the mesonephros mesonephric duct and genital ridge are susceptible to such cellular inclusions

Microscopic evidence of adrenal rest tissue has been demonstrated in close juxtaposition to a actively proliferating hypernephromata cells. Chemically there is a marked similarity in the glycogen fat lipid and lecithin content of the hypernephroma cell and the cortical adrenal cell. The author concludes that hypernephroma tissue may grow into the walls as well as the lumina of the veins. The metastases of these tumors are formed most frequently in the bones lung and liver but have been found also in the rete testis epididymis paradiidymos spermatic cord and within above and below the inguinal canal in the male in the ovary (where they may be easily mistaken for shrunken corpora lutea) and on the tubes in the female and in the retroperitoneal tissue below the poles of the kidneys along the iliopectus muscle to the brim of the pelvis at the sacro iliac synchondrosis in the capsule of the kidney and in the kidney substance on the walls of the neighboring vessels in the solar and renal sympathetic plexuses between the transverse colon and the spleen in the right lobe of the liver and in the pancreas in both males and females

In conclusion the author states that on the basis of his embryological chemical and pathological observations he agrees with the views originally presented by Gravitz  
J SURVEY RITTER M D

Christian E The Clinical Value of the Ureosecretory Constant (La constante uréosecrétoire en clinique) *J d urol méd et chir* 1926 XXI 505

Christian draws the following conclusions with regard to the ureosecretory constant

1 The ureosecretory constant alone is not to be considered a sufficient basis on which to establish the indications for operations on the urinary tract

If the indications for such operation were based upon the constant alone patient who would be benefited by operation might be denied surgical treatment since when the constant is relatively poor the diseased kidney may be able to take over the function of the other

3 The constant shows chiefly the limits of operability without indicating the site of the lesion

4 The site of the lesion and the function of each kidney must be ascertained by ureteral catheterization which gives this information more easily and with less danger than exploratory lumbar incision

5 To determine which kidney is the more diseased and to foretell more accurately the results of operation especially nephrectomy it is necessary to supplement the determination of the constant with catheterization

6 The constant alone is sufficient only for surgical operations on the prostate bladder and ureter  
AUDREY G MORGAN M D

Aschner P W Staphylococcus Infection of the Renal Parenchyma *Ann J U Sc* 1926 CLXXVI 63

After reviewing sixty one case records from the files of the Mount Sinai Hospital New York the author concludes that staphylococcus infection of the kidney parenchyma is usually metastatic from a boil carbuncle paronychia or other peripheral lesion

In the acute cases perinephric suppuration develops early and the diagnosis is relatively easy. In the subacute and chronic cases the clinical manifestations are variable simulating those of various types of thoracic abdominal and spinal disease. The absence of striking urinary symptoms and urinary changes and the indeterminate results of cystoscopic and bacteriological examinations tend to make the diagnosis of cortical abscess or carbuncle of the kidney a difficult one. It is only by bearing the condition constantly in mind and making a search for a preceding peripheral infection by staphylococci that the insidious cases may be recognized. The evaluation of provocative vaccine injections must await a more extended experience with the method

Some of these infections undoubtedly resolve without frank suppuration. The prognosis with

proper surgical therapy in young adults is excellent. In children and in older adults it is a graver affection, particularly if metastasis or venous involvement occurs. Nephrectomy is necessary in a few cases, such as those with widespread involvement of the renal parenchyma and persistent bacteriemia.

JOHN G. CREETHAM, M.D.

**Hinman F. and Gibson T. E. Report of a Remarkable Case of Recurrent Urinary Lithiasis in a Physician in Active Practice, with an Unbelievably Small Amount of Renal Tissue Death Not from Uremia But Due to Cardiac Failure.** *J. Urol.* 1916 41: 43.

The patient whose case is reported in this article had a calculus removed from the bladder in 1912. In 1917, the left kidney was removed for calculous pyonephrosis. In February 1921, the X-ray showed stones in the remaining kidney and anuria developed. The blood urea then equalled 126 mgm per 100 c.c. and the two hour phthalein test was 10 per cent. After a pyelotomy, the urea came down to 23 mgm and the red test rose to 35 per cent.

In March, 1921, the pelvis of the right kidney and the ureter were again opened and two stones were removed. In May, after a few transfusions the patient resumed his medical practice. In April 1922, the symptoms recurred and the X-ray showed a large stone shadow in the pelvis of the kidney. Between March and May, 1923 anuria again developed and stones were removed from the fistulous loin tract. The general condition then improved but three months later the patient died suddenly of heart failure.

Postmortem examination of the right kidney showed it to be small and without a pelvis. On section, several large communicating cavities containing calculi were found to encroach upon the atrophic kidney substance. The pathological diagnosis was calculous pyonephrosis. MAURICE MELTZER, M.D.

**Patch F. S. Ureterocele With the Report of a Case.** *J. Urol.* 1916 41: 125.

In the earlier cases of ureterocele reported in the literature the condition was found most frequently at autopsy and in young girls. More recent literature shows that it occurs with equal frequency in both sexes and at all ages.

There are two chief types: a cystic type with thin transparent walls in which the contents of the sac are often discharged from time to time with collapse of the sac, and a type in which the wall of the sac is thicker and the tumor is larger, often pedunculated, and more constant in volume.

The ureteral orifice varies considerably in its size and location. The contents of the sac may be clear or infected. Often calculi are present. In the case reported by the author a secondary stone was found in the ureter above the ureterocele.

Ureterocele is usually unilateral, rarely bilateral. Its association with other congenital anomalies, particularly double ureters, has been noted in about 50

per cent of the cases. In the author's opinion, the essential factor in its production is a congenital or acquired stenosis of the vesical orifice of the ureter or an intraluminal obstruction acting at the same point.

Ureterocele may be associated with vague renal pain and pyuria.

When treatment is indicated it should be surgical. The ureterocele may be attacked through the urethra or by a suprapubic or vaginal operation. The trans-urethral operation should be reserved for the milder cases. The suprapubic operation is preferable for the pedunculated forms and those complicated by calculus.

The author reports his case in considerable detail. At operation a pedunculated mass was found attached at the site of the right ureter and a calculus was palpated at the bulbous extremity. The ureteral opening was found at the tip of the mass. The operation consisted in resection followed by suture of the two layers of mucosa with interrupted catgut sutures. One month later a stone was removed from the pelvic ureter of the same side by extraperitoneal ureterolithotomy.

HARRY A. FOWLER, M.D.

**Micotti R. Two Cases of Crural Hernia Containing the Ureter.** (Due casi di ernia crurale dell'uretere). *Riforma med.* 1926 41: 656.

The author reports two cases of femoral hernia in women in which the ureter was found in the hernial sac at operation and was replaced in its normal position. In both cases uneventful recovery resulted.

The cause of this condition is not known. Age does not seem to be a factor. It is more common in women than men as it is most frequently associated with femoral hernia. The author suggests that it may be due to a pathological change in the site and abnormal length of the ureter. Even the normal ureter is very elastic. Albarran says it can be elongated about 8 cm. by simple traction. There may also be an anomaly in its course, bringing it nearer the hernial rings so that it is easily drawn downward with the intestine.

The condition might possibly be diagnosed from disturbances of canalization of the ureter or a decrease in the amount of urine that cannot be accounted for otherwise, especially a decrease which occurs when a constriction is put around the waist and disappears when the constriction is released. Other signs of aid in the diagnosis are a hydronephrosis contemporaneous with the hernia which cannot be accounted for otherwise, especially if it is intermittent, and changes observed on cystoscopy and catheterization of the ureter. However, none of these signs is pathognomonic and the diagnosis is very difficult. If the diagnosis is not made, it is quite possible for the ureter to be torn or cut during the operation. If this occurs, the injured ureter should be sutured and measures taken to prevent stricture when it heals.

AUDREY G. MORGAN, M.D.



**Sargent J C** Bilateral Ureteronephrosis Associated with Congenital Gaping Ureteral Orifices Report of a Case After Four Years of Permanent Drainage *J Urol* 1926 xvi 25

It is generally recognized that ureteral dilatation is usually due to urinary obstruction or defective innervation of the musculature of the bladder and ureteral walls. Beyond these considerations the etiology is not so clear. The type of ureteral dilatation considered by Sargent is that which is associated with open functionless ureteral orifices but unassociated with obstruction or faulty innervation. In 1915 Kretschmer and Greer collected from the literature sixteen cases of this anomaly and added one case of their own. Two cases have been added since that time making a total of nineteen.

Sargent's case was that of a girl  $4\frac{1}{2}$  years old the seventh child who was normally born and was breast fed for four months. For the past two and a half months she had been in an orphanage and during that time had had measles. A few months before her admission to the hospital her health had rapidly failed and she developed an insatiable thirst with enuresis and the frequent voiding of large amounts of urine. When she was first seen by the author she was poorly nourished, her skin was pale and dry, and her urine was pale and clouded with pus and colon bacilli. The specific gravity of the urine was 1.004.

During the first few weeks in the hospital the patient had a low septic type of temperature, an astounding thirst and polyuria and several times each day attacks of dyspnea. It was therefore apparent that she was both septic and semi-uramic as the result of some urological condition.

On cystoscopic examination the bladder mucosa was found normal but the ureteral orifices were seen to be widely gaping. Ivelo ureterograms showed both ureters enormously dilated and tortuous and both renal pelvis dilated.

In order to relieve the intravesical pressure permanent suprapubic drainage was established. Following this operation the thirst and polyuria subsided. The patient was kept under constant observation until she died of an intercurrent influenza bronchopneumonia.

Autopsy revealed no obstruction to the normal bladder drainage which could account for the dilatation of the urinary tract above the bladder. The mucosa of the entire tract showed extensive changes due to severe prolonged inflammation.

CLAUDE D HOLMES M D

## BLADDER URETHRA AND PENIS

**Hinman F and Wesson M B** The Trigone of the Bladder as a Factor in Urinary Obstruction with a Report of Cases and a Discussion of the Operative Treatment *Surg Gynec & Obst* 1926 xliii 1

Hinman and Wesson present in detail four cases in which the trigone of the bladder was a responsible

factor in urinary obstruction. On the basis of these cases and the literature they discuss the anatomy, physiology, pathology and treatment of this condition and present an original classification of trigonal abnormalities causing urinary disturbances.

They conclude that hypertrophy of the interureteral ridge may result from chronic vesical irritation, mild vesical or intravesical obstruction or both, and that hypertrophies of the interureteral ridge may be of a type and position to produce obstruction to urination. The obstructing interureteral bar or ridge is always an acquired condition but its cause may be congenital. An obstructing interureteral ridge may result also from chronic ulceration usually tuberculous which dissects or undermines the trigone. Marked obstruction from a hypertrophied ridge seems to be due principally to a hydrostatic undermining of the trigone back of it, a position practically immune to the formation of diverticula.

The treatment of the obstructing interureteral ridge is suprapubic cystotomy and either incision of the ridge with suture and ligature of the incised edges to control hemorrhage or resection of the ridge and the supratrigonal pouch with restoration of the base of the bladder. The latter is the preferable method when the pouches are deep.

Before operation for a hypertrophied interureteral ridge secondary to obstruction the primary obstruction should be removed and a period of time allowed to elapse to determine whether the removal of the original obstruction will not cause the disappearance of the interureteral hypertrophy.

JOHN G. CHEETHAM M D

**Ceccarelli G** A Method of Increasing the Capacity of the Bladder by Means of a Loop of Intestine (Sul modo di aumentare la capacità vescicale per mezzo di un'ansa di intestino esclusa) *Ann Ital di chir* 1926 v 346

The bladder has such a great capacity for regeneration that after resections little effort has been made to reconstruct it by plastic operation. But if there are very profound and diffuse changes in the wall it may not have sufficient vitality for regeneration. The disease that most frequently causes serious atrophy of the bladder is the dissecting gangrenous cystitis described by Stockel. Stockel was also the first to attempt plastic reconstruction of the bladder by means of intestine but he was obliged to give it up because of the gravity and extent of the changes in the bladder. Only four other clinical cases of reconstruction of the bladder by means of intestine have been reported. One of the patients died two months later of pyonephritis. In the other cases the operation was apparently successful but was done too recently for a report of the late results.

To determine the practicability of such an operation the author performed experiments on dogs. In some of the cases he resected a loop of intestine from 15 to 20 cm long and sutured the divided ends together so that the loop resembled an air

cushion. He then made an incision in one side of the cushion and sutured it into an incision of equal length in the bladder.

In other cases the proximal end of the resected loop was simply closed and an anastomosis was made between the distal end and the bladder.

In still other cases the proximal end was sutured to the abdominal wall.

In some cases longer loops were used and in others loops of large instead of small intestine were employed.

Ceccarelli found that the small intestine became adapted to holding urine. There is no danger of absorption of the urine by the loop of intestine because, in time, the mucous membrane atrophies and loses its absorptive capacity.

The results with the use of large intestine were poor because infection occurred and serious renal and vesical lesions developed. The use of small intestine was technically easier than the use of large intestine. The results were better when the loop of intestine was sutured in a circle than when the proximal end was simply closed and left free or sutured to the abdominal wall. Loops from 15 to 20 cm long were better than longer ones because the longer ones linked or became adherent to the surrounding tissues. Though bacteria were found in the urine on later examination, the bladder usually became normal after a slight inflammation of its mucous membrane and infection of the kidney was unusual.

A supplementary bladder which contains as much as from 100 to 200 cc of urine may be constructed in this way. The anastomosed loop fills and empties regularly if the anastomosis is made in the proper place and is large enough.

AUDREY G MORGAN M D

Gaudy, J and Schillings M. Tumors of the Bladder (Les tumeurs de la vessie). *Le cancer* 19 5  
11 1

This article is a general review of the entire subject of cancer of the bladder and is supplemented by a long bibliography. The authors believe it certain that one of the predisposing causes of vesical cancer is chronic irritation. Bladder tumors constitute about 3 per cent of tumors in general and about 3.9 per cent of all affections of the urinary tract.

At least half of these tumors are malignant. The authors describe the histological appearance of the different forms of tumor and the various methods of treatment.

The best treatment for benign epithelial tumors is the application of the high frequency current through the open bladder or by endoscopy. Chemotherapy with trichloroacetic acid may also be used but is less active. Tumors which are known or suspected to be malignant should be treated surgically as early and radically as possible. Endoscopic surgical operation should be abandoned for open operation.

As radiotherapy is still in the experimental stages, the authors do not feel justified in expressing an opinion as to its effectiveness. However, they believe that as roentgen and radium rays are known to have a good effect on cancer in general and a few brilliant results have been obtained with their use in bladder cancer, their effect should be further investigated and attempts should be made to perfect the technique of their application.

AUDREY G MORGAN M D

Dodson A I. Hunner's Ulcer of the Bladder—A Report of Ten Cases. *Virginia M Month*, 1926  
131 305

The author presents a report of ten cases of Hunner's ulcer of the bladder and draws the following conclusions:

1. Experience justifies the belief that foci of infection such as infected teeth, tonsils, sinuses and possibly cervicitis bear a causative relation to Hunner's ulcer.

2. The bladder lesion is frequently complicated by ureteral strictures or infection of the kidneys which must be eradicated before permanent relief can be obtained.

3. Very gratifying results have been obtained in early cases from instillations of silver nitrate.

4. Excision of the ulcer bearing area of the bladder should be reserved for cases that do not respond to local medication or fulguration.

5. In long standing cases of elusive ulcer there is contraction of the bladder wall and urethra. In such cases dilatation of the urethra and irrigation of the bladder are helpful after fulguration or resection.

J SYDNEY RITTER M D

Reynard. Radium Therapy of a Bladder Cancer Cure Persisting After Two and a Half Years (Curieotherapie d'un cancer vésical guérison depuis deux ans et demi). *J d'urologie et de chir* 1926 xxi,  
5 3

A woman 65 years of age had a cauliflower cancer of the bladder which was found on histological examination of an excised piece to be a stratified pavement epithelioma with infiltration of the whole of the left wall. Two treatments by electrocoagulation had destroyed a part of the growth but had not affected the infiltration. As the tumor was too friable for the introduction of radium needles, three tubes containing altogether 75 mgm of radium were introduced through a cystostomy, opening and tied to the tumor. The bladder was then tamponed and was drained by means of a Frey drain. The radium was kept in place for forty-eight hours.

Ten days later palpation showed that the infiltration had entirely disappeared, the bladder wall was soft and pliable. The suprapubic fistula closed quickly and the urine cleared up and lost its gangrenous odor. Today, two years and a half after the irradiation, the urine is clear, the bladder wall is soft and there is nothing to be seen which might arouse suspicions.

In the author's opinion radium should be used more frequently in the treatment of bladder cancer. It should be introduced through a cystostomy opening as its introduction through the ureter on a sound is dangerous. Curettage of the fungosities is contra-indicated as it is not they that are dangerous but the infiltration and curettage may disseminate the tumor. Needles are preferable to tubes but if their use is impossible the tubes may be tied to the tumor as in the case reported. ALFRED G. MORGAN, M.D.

**Chauvin and Maisonneuve: Urethrorectal Fistula. Interurethrorectal Myorrhaphy of the Levators** (Fistule uréthro rectale myorrhaphie inter uréthro rectale des releveurs) *J. d'urolog. méd. et chir.* 1926, xv, 363.

In the case of a man 44 years of age Chauvin treated a urethrorectal fistula first by Cooper's method but the fistula recurred. Though Cooper's method is the one most frequently used it is often followed by recurrence and many modifications of it have been devised. In the second operation in the case reported Chauvin used an entirely new procedure.

He dissected the urethra and rectum apart, removed all of the scar tissue and after obliterating the urethral and rectal orifices of the canal sutured the two levator ani muscles from in front backward for a distance of about 4 cm. making a vertical separation between the urethral and rectal orifices. The urethral orifice then lay above the layer of muscle and the rectal orifice below it.

Following this procedure there was little chance for the fistula to recur even if the sutures did not hold. As a matter of fact the rectal wound did break down but as it opened externally it caused only an ordinary fistula of the margin of the anus which healed spontaneously in a few weeks. To permit free drainage the skin wound was left open except at the angles where a few sutures were introduced.

ALFRED G. MORGAN, M.D.

## GENITAL ORGANS

**Bumpus, H. C. Jr.: The Results of Punch Prostatectomy.** *J. Urol.* 1926, xvi, 59.

Bumpus reviews the history of median bar obstruction and comments on the fact that in spite of nearly a century's recognition of the condition the punch prostatectomy has not been employed to any great extent until recently. He attributes this fact to the technical difficulties with the old instruments.

In his opinion the best instrument is the improved median bar excisor of Braasch with which the entire operation can be performed under direct vision and a clean cut wound is produced which is much less prone to give rise to secondary pyelonephritis or delayed hemorrhage and heals more quickly than the large cauterized areas resulting from the use of cautery punches. Bumpus prevents bleeding by coagulating the bleeding points with the Bugbee electrode. Comment is made on the fact that punch prostatectomy in the presence of lateral lobe enlargement is usually not satisfactory.

# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

**Bloodgood, J. C.** How to Diagnose and Treat a Bone Lesion. *J. Bone & Joint Surg.* 19-6 viii 470

Latent and healed lesions in bone are as a rule discovered by X-ray examination made because of a recent injury. These lesions are usually bone cysts. In no case without previous symptoms has a roentgenogram taken because of recent injury revealed a giant cell tumor, a sarcoma, or a metastatic tumor. When the injury was associated with fracture, cysts and metastatic tumors have been found. Rarely is a fracture the first evidence of a primary sarcoma or giant cell tumor.

Trauma is of little or no importance as a cause of bone cysts but may be a factor in the production of giant cell tumors.

Chondromata are believed to be congenital residues. Myxomata are probably degenerative processes in chondromata which later assume neoplastic characteristics. Both lesions may be central or periosteal. When they occur in the epiphyses in adults they are difficult to diagnose from giant cell tumors.

Sarcomata as a rule involve the entire bone. The majority of central sarcomata are myxosarcomata or chondrosarcomata. A true periosteal sarcoma occurs, however, which may take the form of a fibrosarcoma or osteogenic sarcoma.

Of the diffuse sarcomata there are two distinct types, the sclerosing and the osteoporotic type. These can be readily diagnosed from the roentgen picture, the sclerosing type being characterized by excessive periosteal bone formation and the osteoporotic type by the appearance of atrophy in the shaft and not in the bone ends. In rare cases, however, the picture of the latter type is suggested by multiple myelomata.

One of the causes of sarcoma is single or repeated trauma.

Since in so many cases of sarcoma there is a history of trauma, a roentgenogram made at the time of the injury is very valuable as it may be used for comparison with a later roentgenogram if the signs and symptoms do not subside or if they reappear.

When a clear space is seen between the shaft and a mass of bone in the soft parts, sarcoma may be excluded but when bone formation begins in the periosteum and is of slight degree, sarcoma cannot be excluded. Excessive ossifying periostitis and ossifying myositis can readily be recognized but it is difficult to differentiate a subperiosteal hematoma with ossification and periostitis with slight ossification from sarcoma.

Usually the chief complaints of patients with a bone lesion are pain, a palpable swelling, and loss

of function. The older the lesion the more readily the diagnosis is made. A careful history is essential.

The feeling of a bone shell surrounding a central lesion is entirely different from that of the periosteal mass of a diffuse periosteal lesion. Pain and tenderness are often very helpful in establishing the diagnosis. A Wassermann test, a blood count, an examination of the urine for Bence Jones bodies, an examination of the chest for tuberculosis, and an examination for primary tumor are very necessary. As multiplicity of the lesion will put it in an entirely different group, a search should be made for other lesions. The roentgen ray examination should include roentgenograms of the chest and of the affected and the corresponding uninvolved bones.

A single central lesion of the shaft in a child under 18 years of age is practically always a bone cyst. Central giant cell tumors are rare in early life. Multiple myelomata may occur at this age, however, and as this disease may come under observation as a single lesion it must be considered a possibility.

If there is a fracture, it should be treated as an ordinary fracture. Ossification usually takes place in from three to six weeks. If ossification fails to occur in this length of time, exploration should be done because of the possibility that the lesion may be a giant cell tumor which requires curettage followed by thermal and chemical cauterization.

If there is no fracture, the progress of the lesion should be kept under observation by frequent roentgen examinations. If ossification is delayed, operation should be performed and the cyst fractured after a piece of its wall has been removed to prove that it is a cyst. A cyst appears as a bone shell and fluid, a shell with a connective tissue lining, and fluid or a shell mass with fibrous connective tissue with or without minute cysts.

If the lesion is a giant cell tumor, the cavity is filled with soft hemorrhagic, cheesy material which bleeds like granulation tissue and the shell bleeds when it is curetted.

A caseous tuberculous mass is rarely found. Bone grafting is indicated only in neglected cases with very large bone cysts.

Central lesions of the shaft in adults are usually chondromata, myxomata, metastatic tumors, myelomata, or chondromyxomata. The author has never seen a giant cell tumor in the shaft in an adult. If a latent cyst is found it should be treated as described.

In the treatment of central lesions of the shaft other than cysts in adults the use of radiation first is justifiable. If ossification does not take place after a time operation is indicated. If the lesion is not a cyst, resection and bone transplantation should

be done under any circumstances because this restores function for as long as the patient will live better than any other treatment

Multiple lesions of the shaft are usually cysts or myelomata in children and myelomata or metastatic tumors in adults

Central lesions of the epiphysis are rare in children and when found are giant cell tumors. In adults these lesions are usually giant cell tumors but occasionally are scattered bone cysts chondromata myxomata myxochondromata metastatic tumors or multiple myelomata

In the treatment radiation may be tried first. During the radiation period the patient should be at rest in bed in splints or on crutches. If ossification does not occur within the healing cuttage with thermal and chemical cauterization is indicated. In lesions of the epiphysis of the lower end of the ulna and both ends of the fibula resection is indicated. It is essential that curettage be done before the bone shell is destroyed by the disease.

In conclusion the author emphasizes that the chief aims of the surgeon should be to avoid making a diagnosis of malignancy in cases of benign bone cyst to treat a benign giant cell tumor of the epiphysis before it causes thinning or destruction of the bone shell and thereby renders the functional result of treatment less satisfactory and to recognize the central sarcomata and the benign chondromata so that in cases of the former exploration may be done under the protection of the cautery and the lesions removed radically by resection or amputation. In cases of removal by amputation mutilating operations may be avoided.

FREDERICK A. JOSTES M.D.

Christie A. C. Osteochondritis or Epiphysitis. *J Am M Soc* 1926 LXXVII 291

Christie reviews the anatomy of the epiphyses and discusses the etiology pathology and types of epiphysitis.

The cause of epiphysitis is still under discussion. Tuberculosis rickets and syphilis have been ruled out.

The infectious theory has very little evidence to support it and the endocrine theory is still pure assumption. Although in many cases no history of trauma is given the traumatic theory is supported by the fact that the condition occurs in locations subject to the long continued trauma of weight bearing and muscle pull. This trauma is believed to interfere with the circulation and thereby cause necrosis involving both the bone and the cartilage of the epiphysis.

Epiphysitis occurs in the following locations: (1) the upper epiphysis of the femur (Legg Calve Perthes disease) (2) the tibial tubercle (Osgood Schlatter's disease) (3) the tarsal scaphoid and the head of the second metatarsal (4) the vertebrae (5) the os calcis (6) the olecranon and (7) the ilium. Its occurrence in the ilium is very rare.

FREDERICK A. JOSTES M.D.

Ruggles H. E. and Bryan L. Bone Malignancy from the Roentgenological Aspect. *Radiology* 1926 VII 24

At the present time typical examples of the following primary tumors may be recognized with fair accuracy from the roentgen evidence: (1) giant-cell tumor (2) osteogenic sarcoma (3) undifferentiated osteogenic sarcoma (4) endothelioma and (5) myeloma. There are many borderline and atypical lesions which are not clean cut either roentgenologically or pathologically. Growths may start as one form and develop into another.

Each of the tumors listed is described in detail especially as regards its roentgenographic appearance. Seventy-two cases of malignancy observed by the authors are tabulated with regard to the patient's age and the location of the lesion.

Of the metastatic processes those of carcinoma are the most common and the most characteristic. The lesions are usually multiple and widely distributed and may occur in the form of multicentric or localized cyst-like areas. The type secondary to prostatic disease is characterized by osteosclerosis. Hypernephroma occasionally gives rise to a single metastasis. Lymphoma which is particularly common in the spine may appear in the cancellous bones of persons who have been subjected to prolonged radiation. It resembles carcinoma.

ADOLPH HARTUNG M.D.

Mills G. P. An Apparent Case of Primary Epithelioma of Bone. *Brit J Surg* 1926 XIV 181

Mills reports the finding of an apparently primary epithelioma at the lower end of the right femur of a 27-year-old man. The patient was suffering also from ankylosis of both hips due to tuberculosis. At the time of the examination made by the author the mass had been noted for four months. It was about the size of a small orange and of a firm but not bony hard consistency. Its edge was well defined. No egg-shell cracking was noted. The inguinal glands were enlarged and there was stiffness of the knee.

The pathological diagnosis based upon a section of the tumor which was removed was basal celled epithelioma primary elsewhere. The pathologist stated that the growth was of a type not infrequently seen at the bottom of a sinus but in this case there was no sinus.

Since in a thorough roentgen and physical examination no primary growth could be found the leg was amputated below the hip and the glands were removed from the groin. Within one month the patient was discharged apparently well.

Fifteen months after the amputation there was evidence of metastasis in the clavicle and lung and death occurred two months later.

At autopsy metastases were found in the right hip the pericardium the lungs the prevertebral tissues from the sacrum to the posterior mediastinum and the right clavicle.

The skin peritoneum liver spleen kidneys brain and cord were negative.

The histological picture was that of certain slowly growing epithelial tumors of the skin. Although the pathologist maintained that a primary epithelioma must have existed elsewhere, none could be found by the most careful search. The author therefore assumes that the growth was primary in the femur.

HENRY H. RITTER, M.D.

Coley, W. B. Local Injury as a Causative Factor in Bone Sarcoma with Especial Reference to the Medicolegal Aspects. *Internat. J. Med. & Surg.* 1926 XXIX, 259-318.

From an analysis of the cases of bone sarcoma which have come under his observation during the last thirty years, Coley draws the following conclusions:

There can no longer be the slightest question that in sarcoma, and especially sarcoma of the long bones, a single trauma in the form of a bruise, a sprain, or a fracture may be the direct exciting cause of the tumor.

It is fair to conclude that trauma is the important factor in the development of the disease in a very high percentage of the cases—about 50 per cent.

The interval between the injury and the first appearance of symptoms or signs may vary from a few days to two years or more, but in the great majority of cases it is less than six months and in 50 per cent less than one month.

A rational and thoroughly scientific explanation of the causal relationship between trauma and the tumor is possible if it is assumed that malignant tumors are due to some form of micro organism or virus.

In order to establish a relationship between an injury and the development of a malignant tumor from the medicolegal standpoint it is necessary to establish the authenticity of the trauma. The trauma must have been of sufficient importance or severity; there must be reasonable evidence of the integrity of the part prior to the injury; the tumor must have developed at the site of the injury; the date of appearance of the tumor must not have been too remote from the time of the injury; and the diagnosis must be established from clinical and X-ray evidence and supported, if possible, by microscopic examination.

The article is supplemented by a very full bibliography.

A. GOTTLIEB, M.D.

Meyerding, H. W. The Surgical Aspect of Bone Tumors. *Radiology* 1936 VII, 29.

In most cases of bone tumor the surgeon who has had experience in interpreting roentgenograms of osseous lesions can usually make a correct diagnosis. In some cases, however, the diagnosis is not clear until after exploration, and in rare cases the diagnosis of malignant tumor is missed until metastasis or death occurs.

The roentgenogram is of great aid in the differentiation of bone tumors, but it is especially valuable in the recognition of metastasis to the lungs long

before the clinical signs of such metastasis are apparent. When malignancy is suspected, no operative procedure is justifiable without a roentgenological examination of the chest. Both diagnosis and treatment demand consideration of all clinical and laboratory methods available. The operability of a tumor depends upon its character, type, size, and site, the extent of its progression, and the patient's general physical condition, age, and sex.

Various forms of tumor are reviewed with illustrative case reports. A case of chondroma is discussed. The entire tumor must be removed by curettage. If the cortex is bulging it may be crushed in and closure made by layer. Splinting may be necessary to prevent fracture.

In cases of osteitis fibrosa cystica the best results are obtained by thorough curettage, crushing in of the exposed cortex, and layer suturing if the diagnosis is made early and multiple forms are excluded. The term 'osteitis fibrosa cystica' is used to include the inflammatory cysts and the local and general types of fibrocystic disease.

Giant cell tumors are considered benign and should be treated conservatively, providing functional improvement is possible. They were formerly regarded as malignant, and no doubt reports of cures of sarcoma by amputation have been based on confusion in the diagnosis. In the case cited by the author the pathological diagnosis at operation prompted conservative treatment and the limb and its function were preserved.

Endothelioma usually affects the shaft of the bone as a diffuse swelling involving the periosteum and the periosteal structures. It reacts more favorably to radiotherapy than any malignant tumors of bone that the author has observed. Pulmonary metastasis is inevitable and soon ends life.

Dražinskaja, E. S. Experimental Findings with Regard to the Healing of Defects in Transversely Stripped Muscle and the Regeneration of the Latter. (Experimentelle Ergebnisse zur Heilung der Defekte der quergestreiften Muskulatur und zur Regeneration derselben). *Verhandl. d. 16. russ. Chir. Kongr.*, Moscow 1926 p. 11.

The author studied the healing of defects in the rectus femoris muscle in twenty-two experiments on rabbits. Sections from 1 to 1½ cm in length were excised, the intramuscular fascia being left intact. The muscle defect became filled with blood. The duration of the experiments ranged from two days to a year.

In all cases there was regeneration of the muscle fibers from the pre-existing muscle fibers as the result of a budding out of the muscle tissue with longitudinal division of the fibers. The muscle buds invaded the loose granulation tissue filling the defect. After from one and one half to two months the latter underwent a metaplasia into fatty tissue. The muscle buds continued to grow in the fatty tissue so that, even at the end of a year, the growth of the muscle was still proceeding.

By means of vital staining with trypan blue or carmine it was found that the regeneration of muscle tissue took its origin only from pre-existing muscle fibers and never from connective tissue or granulation tissue.

In no instance was it possible to demonstrate scar formation at the site of the defect.

KORNMAN (Z)

**Key J A. The Mechanisms Involved in the Removal of Colloidal and Particulate Carbon from Joint Cavities.** *J Bone & Joint Surg* 1926 VIII 666

The author reports a very interesting series of experiments performed to determine the natural methods by which carbon particles are removed from a joint cavity.

Higgins' American India ink, a coarse colloidal solution of carbon containing some large particles, was injected into the knee joints of adult rabbits. The animals then being sacrificed at intervals of from one to one hundred and four days.

Most of the carbon was phagocytized by macrophages and leucocytes, and by the tenth day after the injection the great part of it had been carried out of the joint cavity by these cells.

Small amounts of free carbon passed through the intact synovial surface, the synovial cells taking up small amounts and holding them indefinitely.

A variable amount of carbon was held in fibrin clots which became attached to the synovial membrane and over which new synovial membrane grew. A small amount of free carbon reached the popliteal lymph nodes.

Most of the carbon remained in the loose tissue around the joints and was moved from one area to another by succeeding generations of macrophages. The living leucocytes quickly expelled the ingested carbon.

Connective tissue and bone cells of various types retained small amount of the carbon indefinitely. The extracellular carbon was slowly absorbed as colloidal carbon and carried by the blood stream to the reticulo-endothelial system.

ROBERT V. LUNSTEN, M.D.

**Haas S L. Growth Disturbances Following Resection of Joints.** *Arch Surg* 1926 XLIII 36

For the treatment of knee joint diseases in young persons who are growing the majority of surgeons favor conservative treatment. The author made a study of the effect upon growth of resection of the normal knee joint in twelve young rabbits. This report is based upon the findings in four animals as the others died.

Haas found that careful resection of the normal knee joint caused practically no disturbance in length growth, but that growth was arrested by any injury to the blood supply of the epiphysis such as that produced by the passing of sutures through the actively growing columns of cartilage cells.

ELVEN J. BERKSTEDTER, M.D.

**Burbank R. Vaccine Therapy and Serological Diagnosis in the Arthritides.** *J Bone & Joint Surg* 1926 VIII 657

Popoff in 1887 first produced an arthritic lesion experimentally with streptococci. In 1912 Hastings first used the complement fixation tests in arthritis employing streptococci as an antigen.

As a result of such investigations vaccine therapy came into vogue and was hailed as a panacea. When it proved disappointing, foreign protein injections were tried out with slightly more success and occasionally a very brilliant result.

In 1916 the author working under Hastings again began intensive serological work on arthritic lesions.

Different types of streptococci from the tonsils, sinuses, nasopharynx, gall bladder, intestinal tract and prostate were cultured and tested for complement fixation with the patient's blood. Vaccine made from the cultures and used for treatment gave far more satisfactory results than had been obtained previously. At present thirty-five strains of streptococci of various types and from various foci are used.

The first step in the examination of the patient's blood is the determination of its complementary value. The case is then treated according to its serological classification. The prognosis bears a constant relation to the extent of the reaction.

The author concludes that favorable results may be obtained in practically all cases of arthritis showing a favorable complementary value when there is no undrained focus or debilitating disease present and when the treatment is continued over a considerable period of time.

ROBERT V. LUNSTEN, M.D.

**Hanson R. Tendovaginitis or Tendinitis Stenosis.** *Acta Chirurg Scand* 1926 LX 281

The author reports a case of tendovaginitis or tendinitis stenosis of the abductor pollicis longus in a man 38 years of age.

At operation the limitation of extension and abduction of the thumb was found to be due to a spool-shaped contraction of the tendon resulting from a partial rupture caused by a blow on the distal side of the styloid process of the radius. Normal mobility of the thumb was restored by opening the tendon sheath.

The author believes that similar causes may be active in other cases of this nature. He reports this case as evidence of the fact that the tendon itself rather than the tendon sheath may be the site of primary changes.

**Henderson M S. Chronic Osteitis of the Semilunar Bone (Klenboeck's Disease).** *J Bone & Joint Surg* 1926 VIII 504

Klenboeck's disease is a chronic slowly progressing type of osteitis of the semilunar bone. On the basis of the etiology three forms are recognized: (1) an anatomical form due to abnormal pressure

lines from anatomical anomalies (2) an occupational form due to repeated minor injuries, and (3) a traumatic form due to a single marked pressure insult. The condition is characterized by the following three stages:

1 The stage of freedom from pain and disability, lasting as long as two months.

2 The stage of freedom from pain and disability, lasting as long as two months.

3 The stage of osteitis and disability.

With the exception of a lack of prominence of the head of the third metatarsal the objective findings are slight. The pain is aching annoying and on excessive use of the wrist quite severe. There is tenderness over the semilunar bone with usually slight swelling and a moderate degree of restriction of motion.

The roentgenograms are at first negative but later show osteitis of varying degree.

The author reports two cases with a typical history and findings. Surgical treatment was advised against and splints were recommended. The prognosis for complete function was not good.

**Sprogis G.** A Contribution on the Theory of the Inheritance of Dupuytren's Contracture of the Finger (Beitrag zur Lehre von der Vererbung der Dupuytren'schen Fingercontractur) *Deutsche Zeitschrift für Chirurgie* 1916 **xcvi**, 259.

As Sprogis was able in one family to trace Dupuytren's contracture through three generations he agrees with Krogius, Posner, Neumark, Smend and others that the condition may be inherited as a recessive character.

Dupuytren's contracture seems to be more common among males than among females. The tendency toward sclerosis and pathological changes in cases of Dupuytren's contracture affects not only the palmar fascia but also the overlying skin, the tendons over the joints, the nails, and the connective tissue of the tunica albuginea in the septum penis. Block (Z).

**Dresser R.** Lymphoblastoma (Hodgkin's Disease) of the Sternum. *Am J Roentgenol* 1926 **xv**, 525.

Dresser reports four cases of Hodgkin's disease of the sternum which were seen in a period of three years at the Massachusetts General Hospital. In all the condition of the sternum was a complication of a generalized involvement. Since there is no lymphatic tissue in bone, the process must be of a metastatic nature. The roentgen ray demonstrated a destructive type of lesion such as is seen in metastasis to bone. Such osseous lesions respond well to radiation therapy and their presence does not seem to have any effect on the progress of the disease.

CHARLES H. HEACOCK, M.D.

**Smith L. D.** Tuberculosis of the Hip in Children. *J Bone & Joint Surg* 1926 **xviii**, 636.

This article is a report of twenty-seven cases of tuberculosis of the hip treated by conservative methods at the Massachusetts Hospital School, Canton, Massachusetts.

An intensified hygienic regime was followed without special emphasis on any one factor except perhaps fresh air. The patients in which the condition was active were given bed traction until the acute symptoms subsided and then allowed to go about wearing a Bradford abduction splint.

In all of the cases healing occurred. A useful joint was obtained in 22 per cent and ankylosis in 78 per cent. In 40 per cent abscesses developed during the course of the treatment. The length of time that the treatment must be continued to obtain a cure is not stated. The progress of the disease has a definite relation to the patient's general condition.

ROBERT V. FUNSTEN, M.D.

**Duvernay and Parent.** The Roentgenographic Anatomy of Chronic Arthritis of the Hip (Considerations sur l'anatomie radiographique des arthrites chroniques de la hanche). *Rev d'orthop* 1926 **xxviii**, 173.

Malformation and arthritis of the hip are common conditions and when associated may give rise to very complex roentgenographic pictures. The most confusing pictures are produced by combinations of chronic arthritis with coxa plana. The article includes case reports and illustrations of the various combinations of conditions discussed.

LAWRENCE JACQUES, M.D.

## SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC.

**Von Lackum H. L.** Operations in the Treatment of Spastic Paralysis. *J Bone & Joint Surg* 1916 **xviii**, 590.

The operative methods used in the treatment of spastic paralysis include tendon lengthening, the transplantation of overactive muscle groups, peripheral nerve resection and ramisection. Following all of these procedures muscle training is essential.

The author warns against overcorrection of the deformity by tendon lengthening or partial neurectomy of the nerves to the overactive muscles.

The Hibbs method of tendon lengthening is recommended because of its accuracy in gaining length and because it maintains tendon tissue continuity.

The fact is emphasized that all deformities in paretics can be prevented as well as the original injury to the brain. FREDERICK A. JOSTES, M.D.

**Hammond R.** Transplantation of the Fibula to Replace a Bony Defect in the Shoulder Joint. *J Bone & Joint Surg* 1926 **xviii**, 67.

In a case of fracture dislocation of the upper end of the humerus, several attempts at reduction were



made. Finally after fourteen weeks open reduction was attempted. Non union resulted and because of infection the removal of the detached head and neck became necessary. Later the upper end of the fibula was transplanted to fill the deficiency. In the course of about six months there was great improvement in the function of the arm rotation and abduction becoming possible.

Repeated X ray examinations made following the transplantation showed a gradual increase in the size of the transplanted fibula until it reached almost the size of the humerus.

ROBERT V. FUNSTEN M.D.

Page C M Elmslie R C Bristow W R Dunn N and Others Discussion on the Late Results of Operation for Chronic Painful Hip. *Proc Roy Soc Med Lond* 1916 111 Sect Orthop 39.

PAGE states that the choice of operative procedure in chronic painful hip due to osteoarthritis or chronic arthritis secondary to a fracture of the neck of the femur or the acetabulum is dependent upon the patient's age and general condition. In the cases of young and middle aged patients the object should be to relieve the pain and obtain a stable joint. This is done best by producing ankylosis of the hip.

For the elderly patients who occasionally suffer pain in the lumbar spine and the sacro iliac articulation after fixation of the hip he advocates excision of the head of the femur or the production of a pseudarthrosis at the base of the neck of the femur by the Jones method. These operations will relieve the pain but leave an unstable joint and when a fibrous joint results there is a tendency toward the development of an adduction deformity.

ELMSLIE has found arthrodesis to be the most successful operation and recommends it for monarticular cases in both young and aged persons. The results of arthroplasty in his cases were poor as often the pain persisted or the joint became ankylosed.

In cases of ununited intracapsular fracture with pain Elmslie found that the best operation was excision of the femoral head with lowering of the greater trochanter which gave a certain amount of stability.

DUNN states that painful hips are frequently in a position of from 60 to 90 degrees of flexion and if this is corrected by a simple osteotomy the pain will often be relieved.

In cases of old arthritis—tuberculous and pyogenic—FAIRBANK has obtained good results with the Lorenz bifurcation operation but in a case of congenital dislocation in an adult this procedure was unsatisfactory.

To insure permanent free mobility of the hip in cases in which the back and both hips are ankylosed GIRDLESTONE advocates resection of the neck of the femur followed by fixation of the greater trochanter on top of the femur from which the neck has been severed.

ELVIN J. BERKHEISER M.D.

Campbell W C Arthroplasty of the Hip and Analysis of Forty Eight Cases. *Surg Gynec & Obst* 1926 1111 9.

The author reviews forty eight arthroplasties of the hip twenty three of which were done for ankylosis in one hip in twenty three patients and twenty five of which were done for bilateral ankylosis of the hip in thirteen patients. Of the twenty three patients with unilateral ankylosis even could not be traced but were kept under observation for a sufficient length of time to obtain valuable information. Of the sixteen who were traced thirteen showed very definite improvement whereas of the twenty five patients with bilateral ankylosis only seven showed improvement.

The operation gives the best results when it is performed between the eighteenth and thirtieth years. It should never be done in cases in which the ankylosis is the result of tuberculosis in old cases of osteomyelitis with dense burned bone in cases with evidence of acute infection in cases showing osteoporosis or marked atrophy or cases of arthritis deformans. Its field is therefore limited to cases resulting from trauma and cases of acute infectious arthritis.

Through a Kocher incision the great trochanter is severed and dissected upward with the gluteal muscles. An incision is then made parallel with the neck of the femur and the capsule and adherent soft structures are freed from the femoral neck and the acetabulum with a periosteal elevator. This having been done the femur is separated from the acetabulum by means of a large chisel the curve conforming to the head of the femur. The head of the femur and the acetabulum are then remodeled and fascia lata is interposed in such a way that one continuous piece covers the newly formed acetabulum and is deflected onto the head of the femur to form a double layer between the raw articular surfaces.

On the completion of the operation skin traction of from 10 to 20 lbs is applied and the hip is fixed in plaster for ten days. The spica is then bisected from the ankle to just below the crest of the ilium so as to permit hip flexion and passive motion is begun. At the end of four weeks the cast is removed and the patient is allowed to walk with crutches but at night the plaster cast or a double Thomas hip brace is applied to prevent malposition. When the patient first begins to walk a Thomas walking caliper or a Bradford abduction brace may be used to prevent weight bearing.

FREDERICK A. JONES M.D.

Ferrero A Lesions of the Semilunar Fibrocartilages of the Knee Joint. (Le lesioni delle fibrocartilagini semilunari dell'articolazione del ginocchio). *Chir d'organi di movimento* 10 6 31.

Lesions of the semilunar fibrocartilages of the knee joint are seen more frequently in England and America than in Italy because they are generally due to football and other active sports. In recent

years, however, they have become more common in Italy, but are often incorrectly diagnosed and given merely physical treatment when they should be operated upon.

The author describes five typical cases of lesions of the internal semilunar cartilage. In the first three there was only detachment of the attachment between the meniscus and the capsule with more or less displacement of the meniscus. In the fourth case the anterior horn was broken off in addition. In the fifth case there had probably been an old fracture of the meniscus the fragments of which had become fused together to form an osteocartilaginous block fixed in front of the anterior ligament.

Typical symptoms of such lesions are blocking of the joint, pain along the interline and hyarthrosis, but these are by no means noted in every case and the most marked symptoms are not always associated with the most serious lesions.

The roentgen examination was positive only in the author's fifth case in which there was a partly calcified cartilaginous block.

When there is a true luxation of the meniscus meniscectomy should be performed. The meniscus may be easily removed through a parapatellar incision from 7 to 10 cm long made between the border of the patella and the lateral ligament.

In all of the author's cases, recovery was rapid and complete. The patients are now engaged in their usual occupations and some of them are playing football.

AUDREY G. MORGAN, M.D.

## FRACTURES AND DISLOCATIONS

Newell, E. T. Fractures Epiphyseal Separations and Dislocations. A Resume of 1114 Cases. *South Af J* 1916 vii 688.

The experience gained in the late war in the treatment of fracture has been applied by the author in his civil practice. Chief among the advances made in this work was the recognition of the fact that accurate approximation of the fragments is not of prime importance so long as correct alignment is obtained.

In all of the cases reviewed the fracture was reduced as soon after the accident as was permitted by the patient's general condition and the condition of the soft tissues. General anesthesia was used almost exclusively.

In nearly every case the fluoroscope was used in the reduction and after the reduction roentgenograms were made and checked with the fluoroscopic picture. Only slight differences were noted. The classical treatment and the accepted rules regarding the positions of different fractures were adhered to, but by the use of the fluoroscope at the time of the adjustment the different angles and positions could be varied so that more satisfactory results were obtained. In compound fractures debridement was done and if there had been opportunity for the occurrence of infection, the fracture was partially adjusted and thoroughly disinfected for from twenty

four to forty eight hours before complete approximation, suturing, and splinting were done.

The treatment did not end with the removal of the splints, the patients being discharged only after maximal function had been restored with the aid of all available and indicated physical measures.

A. GOTTLIEB, M.D.

Henderson M. S. Noble T. P. and Sandiford, K. *Ununited Fractures with Special Reference to the Chemistry of the Blood*. *J Bone & Joint Surg* 1926 viii 607.

Blood calcium and blood phosphorus determinations in the routine treatment of delayed union give little support of clinical value, yet they do not disprove the theory that bone formation is dependent upon a physicochemical mechanism.

The authors' observations were made in the cases of adults in whom the amount of phosphorus in the serum is less than in children and the clinical solubility product does not have the same value as that found in children with rickets. However, it was noted that when the readings for phosphorus were low union progressed slowly and the bone metabolism was sluggish whereas in one case in which the phosphorus was high, union was very rapid.

For the treatment of ununited fractures the authors advocate exposure to sunshine and artificial light, the administration of calcium and cod liver oil, a well balanced diet and in obstinate cases, operative treatment consisting in proper approximation of the fragments with minimal local injury.

ELVEN J. BERKHEISER, M.D.

Henderson M. S. 'Tenosuspension' for Habitual Dislocation of the Shoulder. *Surg Gynec & Obst* 1926 viii 18.

Henderson reviews the literature on operations for recurring dislocation of the shoulder and discusses the following methods: (1) operations on bone such as arthrodeses and excisions; (2) plastic operations on the capsule; (3) plastic operations on the glenoid fossa or the implantation of a bone graft on the anterior inferior margin; (4) plastic operations on the muscles; (5) plastic operations with the use of fascia lata; and (6) 'tenosuspension'. Tenosuspension is described in detail.

The recurring dislocations are usually of the subcoracoid type, which produce a hernia of the capsule at the inferior margin of the glenoid fossa. When once the habit of luxation has been established, the luxation recurs on the slightest provocation and the disability is immediate. As a rule in such cases the primary treatment was at fault. In the primary treatment there should be fixation for three weeks and no attempt should be made to bring the arm to a right angle for six weeks. When a second dislocation occurs the fixation should be continued for six weeks to allow cicatrization of the capsule and this should be followed by physiotherapy.

In the Mayo Clinic thirty cases have been treated by either capsulorrhaphy or the muscle plastic oper-

ation Following capsulorrhaphy it was found that in only 42 per cent of the cases was there no recurrence of the dislocation although 73 per cent could be classified as either cured or improved In 26 per cent however there was no improvement Failure followed the Clairmont or muscle plastic operation in 37.5 per cent

These operations have now been abandoned at the Mayo Clinic Tenosuspension has been performed with good results on three patients two of whom were epileptics In this operation the patient is placed on his side and the acromioclavicular joint exposed by a curved incision made over the deltoid with the base up A hole is then drilled through the acromion process and the head of the humerus and a free tendon graft 10 cm long obtained from the peroneus longus is passed through these channels and sutured In the cases of epileptics a silk fishline is used in addition to prevent undue strain on the newly formed ligament The arm is then fixed to the side for ten days and no effort is made to raise it from the side for six weeks or to a right angle for six months The arm is kept bandaged to the side for three months The operation prevents the downward excursion of the head

Thirty cases in which operation was performed are reported

Taylor W A Fractures of the Upper Extremity and Their Treatment *Northwest Med* 1926 xxv

Cleveland H E Fractures of the Leg *Northwest Med* 1926 xxv 361

Taylor states that the prognosis of fractures about the wrist especially the Colles fracture depends upon the pathological changes in the adjacent structures As is generally true in most fractures the earlier and the better the reduction the less these changes

For most fractures the early use of physiotherapy is advocated but in fractures of the head and neck of the radius early movement is contra indicated because of the tendency toward the over production of callus

Fractures around the joints should be treated with the parts in the position of election The elbow should be in acute flexion and the humerus in abduction

For compound fractures of the leg Cleveland advocates conservative treatment consisting in early reduction cleansing of the tissues traction with tongs and the application of dressings followed by the use of a splint cast

ELLEN J BERKHEISER M D

Weinstein M Fractures of the Humerus A Study of Fifty Three Cases *Am J Surg* 1926 ns 1 80

In fractures of the humerus closed methods usually suffice Perfect anatomical adjustment is not necessary Early passive and active motion is very important in promoting early healing

Fractures of the upper end of the humerus are best treated by abduction traction and counter traction with the use of a Balkan frame and a Thomas splint For fractures of the shaft the Osgood Penhallow and Mitteldorpp triangles are best In fractures of the lower third acute flexion of the elbow is indicated

Radial nerve paralysis occurs in from 4 to 8 per cent of fractures of the humerus Delayed union and non union occur more often in the shaft of the humerus than in any other long bone

All of the author's fracture cases are inspected daily At intervals the splints are removed and the soft parts are massaged The author believes that this tends to prevent non union by improving the circulation It also prevents pressure damage to the soft parts with atrophy of the muscles and gives an opportunity for early passive motion of the joints

HENRY H RITTER M D

Schwartz A Fractures of the Humerus with Immediate Radial Paralysis (Les fractures de l'humérus avec paralysie radiale immédiate) *Bull et mém Soc nat de chir* 1926 lii 533

In a case of fracture of the shaft of the humerus with immediate radial paralysis Schwartz waits until the fracture has completely healed before he undertakes the repair of the nerve unless the fracture itself requires surgical intervention His reasons are that the paralysis is frequently due to a contusion which is recovered from spontaneously and that if the paralysis does not disappear spontaneously by operation for the repair of the nerve is very much easier after the healing of the fracture The one exception to this rule is made when the paralysis is due to an impaction of the neck at the site of the fracture In such cases the nerve should be liberated at once Such impaction is rare however and can be differentiated from a simple contusion by the symptoms

In the discussion of this report CHIFFOLAT, MOUCHET, DUJARRIG and LAPONTE vigorously opposed the policy of Schwartz Immediate exploration was advocated as the only safe method of establishing the extent of the nerve injury

LAWRENCE JACQUES M D

Blanco J L Fractures of the Elbow and Their Treatment (Fracturas de codo y su tratamiento) *Clin y lab* 1926 vii 183

The author reports fifteen cases of fracture of the elbow which he has treated and illustrates his report with a number of roentgenograms

Supracondylar fractures should be treated as soon as possible before edema develops to a sufficient degree to interfere with reduction Roentgenograms are indispensable to determine the type of the fracture and whether reduction has been complete

The best position in which to retain fractures of the elbow is that of hyperflexion Massage and forced movements of the arm should be absolutely prohibited as they are injurious The only move

ments that may be allowed are those made by the patient

In operations on the elbow the approach which gives the freest access to the joint is through the olecranon

ANDREW G. MORGAN, M.D.

Monod R. Trochanterodiaphyseal Fractures (Les fractures trochanterodiaphysaires) *Rev. de chir.* Par 1906 xlv 5

In the Delbet Clinic fractures through the upper end of the femur are classified as follows

- 1 True fractures of the neck (a) decapitation fractures (b) transcervical fractures
- 2 Cervicotrochanteric fractures
- 3 Trochanterodiaphyseal fractures

The purpose of this article is to describe the differences between the two latter types

In cervicotrochanteric fractures the line of fracture follows approximately the anterior intertrochanteric line. It always begins on the neck in the trochanteric fossa at the juncture of the neck with the greater trochanter and descends obliquely and medially, ending above the lesser trochanter. It is often complicated by accessory fracture lines. One such accessory line, which is almost always present, separates the greater trochanter from the diaphysis. Another which is less common separates the lesser trochanter and may lead to confusion of this fracture with the trochanterodiaphyseal type of fracture.

In the trochanterodiaphyseal fracture the fracture line begins on the greater trochanter more or less close to its summit and terminates on the diaphysis somewhat below the lesser trochanter. A secondary line passes from the primary one above the lesser trochanter and separates the latter with more or less of the diaphysis from the shaft. The primary line does not involve the neck of the femur. The trochanterodiaphyseal fracture is never impacted. Below there is moderate overriding and above some separation of the fragments. The displacement is attributed by the author to the abduction of the superior fragment caused by the action of the muscles.

The trochanterodiaphyseal fracture is intermediate between the cervicotrochanteric and the subtrochanteric fracture.

The limb is usually held in abduction, a position which may suggest dislocation. With this abduction there is lateral rotation. In only one of the author's five cases was the limb held in adduction. There is some variation in the position according to whether the extremity is flexed or extended. When it is extended the lateral rotation is more marked than the abduction. When the limb is flexed, the diagnosis is more difficult, the condition often being diagnosed as an anterior dislocation. Delbet says that pain caused by pressure on the greater trochanter indicates fracture rather than dislocation.

The deformity caused by the fracture consists in protrusion of the upper end of the distal fragment in the trochanteric region due to angulation of the two fragments. Ecchymosis is rare.

In the X-ray examination the region of the greater trochanter should be very carefully examined.

The treatment of choice is continuous extension. This may be obtained by the method of Tillaux or Hennequin or by the use of the Delbet apparatus for thigh fractures. With Delbet's apparatus continuous extension is maintained for five or six days. The appliance is then fixed and the patient allowed to walk. Two patients thus treated were allowed to leave the hospital after three weeks and instructed to come back for the removal of the splint at the end of five weeks.

In no other fracture of the femur is the prognosis so favorable as in trochanterodiaphyseal fracture. Reduction is easy to obtain and maintain union occurs rapidly by bony callus, and functional recovery is excellent, usually perfect. The shortening varies from 1" to 1½ cm. M. L. MASON, M.D.

Sherman, W. O. Operative Treatment of Fractures of the Shaft of the Femur with Maximum Fixation. *J. Bone & Joint Surg.* 1916 viii 494

Sherman discusses the operative reduction of fractures of the shaft of the femur from the standpoint of a return of from 95 to 100 per cent of normal function. For such a result, an aseptic technique and a proper armamentarium are essential. The usual aseptic technique employed in laparotomies is not sufficiently refined for open operations on bones.

In the fixation of the fragments in the author's cases the fragments are held with Lane or Lambotte bone forceps while a vanadium steel plate of Sherman's design is applied with vanadium steel tap screws. The bone plates and screws are never removed unless infection develops.

Skin traction is seldom used by Sherman in the treatment of fractures of the femur. In reduction by closed methods, skeletal traction (obtained preferably with tongs) is the method of choice. It is emphasized that mere correction of overriding or shortening is not sufficient. The normal weight bearing axis must be obtained and at least 25 per cent of the fractured fragments must be brought into contact. When this is impossible by closed reduction, open reduction is indicated.

If skeletal traction is to be employed, full reliance must be placed upon it as open reduction is a dangerous procedure in the presence of caliper wounds in which there is usually a low grade infection. Should operative intervention become necessary after skeletal traction has been attempted, the wound should be left open and treated by the Carrel method.

Open operation should be performed in the first twelve days following the injury because after that length of time it is more difficult and greatly retards early bone union with a minimum of callus.

In the author's series of more than 1,500 operations for fracture of the femur the incidence of infection was no higher than in ordinary elective operations such as herniotomy.

FREDERICK A. JOYCE, M.D.

Prince, L. D. Derangement of the Ankle Joint Following Fractures of the Lower End of the Tibia and Fibula. *California & West Med* 1926 xxv 42

Fractures of the lower end of the tibia and fibula are more frequently treated improperly than fractures of any other type.

As associated with the Pott's fracture there is frequently some posterior lateral displacement of the astragalus.

The treatment should consist in early manipulative reduction under anesthesia followed by immobilization in a plaster cast.

Physiotherapy may be begun after the third or fourth week and weight bearing after from six to eight weeks. To prevent the development of pronated foot the shoe should be tilted by a wedge of leather  $\frac{1}{4}$  in. thick on the inner margin of the heel and sole.

Malunion in Pott's fractures is a common cause of severe disability but operative intervention often gives satisfactory results. Correction can be accomplished by cuneiform osteotomies of the lower end of the tibia and fibula.

ELLEN J. BERNHEIMER, M.D.

Fiorini E. Fracture of the Calcaneum (Contributo allo studio di II frattura del calcagno). *Chir. d'organi di movimento* 1926 x 403.

Practically the only method by which fractures of the os calcis can be diagnosed is roentgen examination. Ely says that in 60 per cent of the cases in which the diagnosis is made from objective examination it is incorrect. A correct diagnosis has become

particularly important because of the new laws with regard to workmen's compensation.

In order to make a roentgen diagnosis it is necessary to know the normal structure of the os calcis thoroughly since fractures generally follow the lines of the trabeculae. Fiorini includes in his article a diagram showing the arrangement of the three systems of trabeculae and he describes it in detail. The roentgenogram of the fractured os calcis should always be compared with a roentgenogram of the normal.

In cases in which no lesions of the trabeculae are seen special attention should be given to the posterolateral surface of the bone which articulates with the astragalus and to the angle formed by this facet with the posterosuperior surface of the bone. Disappearance of the angle is the first and most constant sign of a change in the surface which articulates with the astragalus. One lateral roentgenogram is not enough if there is any doubt, roentgenograms should be taken in other projections.

The treatment should be directed to ward preventing the tarsalgia that follows such fractures. Operative suture of the fragments is often necessary. The skin incision should be made in such a way that a plantar scar will be avoided. The normal form of the os calcis should be restored as nearly as possible, the plantar arch reconstructed and any luxation of the astragalus reduced. All fragments which might give rise to exostoses or exert pressure on vessels or nerves should be removed. If the fracture of the bones is very serious it may be necessary to perform a subastragaloid arthrodesis.

ALFRED G. MORGAN, M.D.

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

Babcock, W W A New Treatment for Thoracic Aneurism *Ann Clin Med* 19 6 iv 933

The author presents an operative procedure for thoracic aneurism which is based upon the hydrodynamic principle that the lateral or wall pressure in tubes containing moving liquids is inverse to the velocity of the liquid.

By performing an end to end anastomosis between the right carotid artery and the right internal jugular vein a short distance above the subclavian vein he substitutes the swiftly moving arterial blood for the sluggish venous flow. The blood from the right common carotid is therefore immediately returned to the right heart, with a hypothetical speeding of the circulation through the right heart. As a result there is a fall in the intra aneurismal and the general systolic pressure and an increase in the pulmonary circulation.

After the operation the substernal pain is appreciably diminished, the aneurismal pulsation is less and the general circulation is improved.

The procedure is presented not only as a method of treating thoracic aneurism but also as a possible means of improving the pulmonary circulation. It is to be studied further with regard to its application in certain stenotic affections of the heart and special types of pulmonary tuberculosis.

DON K. HUTCHENS M D

## BLOOD, TRANSFUSION

Piney, A The Importance of Hematology in Surgery *Brit J Surg*, 19 6 xiv 9

Some of the commonly accepted deductions from hematology must be modified before they can serve the purposes of the practitioner. An extreme degree of leucocytosis is often seen in cases without pus, and leucopenia is often seen in cases with large accumulations of pus. The degree of the leucocytosis is not as important as the character of the constituent cells.

As the result of an increased functional demand due, for example to the effect of toxic or infective stimuli a leucocytosis occurs usually with a marked neutrophilia. If the infection is very intense, the formative tissues may be so injured that no increase in the circulating leucocytes occurs though there will be a relative increase in the neutrophils, many of which show signs of degenerative changes which occurred before their entry into the circulation. Leucocytosis and leucopenia are not fundamentally different processes. Certain toxins may give rise to one or the other, depending upon the concentration of the toxin.

Lymphocytosis occurs after infective processes as a sign of the onset of the reparative process. Many chronic infections are accompanied by a lymphocytosis. The lymphocytosis which occurs in typhoid fever is of interest because, when it disappears, the prognosis is grave. Lymphopenia is of the most unfavorable prognostic import. An extreme lymphopenia may result from widespread destruction of the lymphatic tissues such as may occur in tuberculosis. A marked functional defect of the hematopoietic tissues often accompanies the great destruction of the myeloid tissue resulting from infiltration by numerous metastatic malignant tumors. As the result of a persistent demand on the formative tissues, such as occurs in prolonged suppuration, there may be also a progressive diminution in the number of leucocytes circulating in the blood.

In cases of posthemorrhagic anemia the relationship between the leucopoietic and erythropoietic mechanisms, i.e., between both main constituents of the bone marrow is evidenced. In the blood there are the signs of active replacement of the red blood cells, but at the same time there is a great production of leucocytes evidenced by a well marked leucocytosis. Because of the loss of iron from the system in hemorrhage the regeneration of the erythrocytes is slow. In cases of anemia due to hemolysis such as occurs in snake venom poisoning, the regeneration is rapid because iron is present.

Anemia due to injury of the marrow is best exemplified by aplastic anemia and cases in which malignant metastases invade the bone marrow, in juring part of it and stimulating the adjacent parts to a greater but less orderly proliferation.

Polychromasia and punctate basophilia in a blood showing normoblasts in small numbers and a tendency of the leucocytes to approach normal are of good significance. A similar picture, but with the signs of regeneration much more intense does not necessarily imply that the process of repair will be successful. More often, the prognosis is poor in such a case. A persistently low number of red corpuscles with scanty signs of regeneration, such as absence of polychromasia and of normoblasts is of unfavorable significance. This is true particularly when there is an associated leucopenia or even a relative lymphocytosis.

SAMUEL KAHN M D

Evans W A and Leucutia T The Neoplastic Nature of Lymphatic Leukemia and Its Relation to Lymphosarcoma *Am J Roentgenol*, 19 6 iv 497

The authors review the theories of the etiology of lymphatic leukemia. In support of the neoplastic theory they note that the condition responds to radiation therapy in the same way as lymphosarcoma.

Three cases of lymphosarcoma are reported in which the mediastinal lesions responded promptly to radiation therapy and the clinical picture of lymphatic leukæmia developed later. In the two cases which came to autopsy it was found that the mediastinum was free from involvement but that lymphosarcomatous nodules had invaded the bone marrow. The authors draw the conclusion that lymphosarcoma is transformed into lymphatic leukæmia as soon as the bone marrow becomes involved.

CHARLES H. HEYCOCK, M.D.

Simson F. W. A Study of the Third Agglutinating System in Human Blood. *J. Path. & Bacteriol.* 1926 LXX 279

In a study of the blood Simson confirms the observations of others that a third pair of agglutination elements exists in human blood.

The extra agglutinin  $\gamma$  may be studied quite readily without the assistance of a pure natural  $\gamma$  serum. Absorbing a Group III serum of the type  $\alpha\gamma$  with Group II ( $\beta-A$ ) cells is the most satisfactory method of obtaining a suitable serum.

The  $\gamma C$  system, either as agglutinin or its receptor, is present in a large percentage of human bloods.

With the majority of bloods cross agglutination without absorption will fail to demonstrate the presence of the  $\gamma C$  system and its existence makes no difference to the ordinary methods of grouping.

The B system appears to be present in all bloods and C are sometimes suppressed. The C system when present follows the same distribution as the A in that the agglutinin is found in the sera of Groups III and IV and the receptor in the cells of Groups I and II.

# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE, POSTOPERATIVE TREATMENT

Lemann I I *Surgery in Diabetics* New Orleans  
M & S J 19 6 1xvix 03

Lemann presents a statistical review of surgery on diabetics, showing the marked increase in the number of operations and the decrease in the mortality since the use of insulin. The pre operative and postoperative treatment are described and typical cases are reported.

From his investigation the author draws the following conclusions:

1. Surgery on diabetics has been vastly safer since the introduction of insulin.

2. The postoperative mortality should not be greatly in excess of that of normal persons provided proper safeguards are observed.

3. The old fear of surgical operations in the presence of diabetes is justified when these safeguards are not observed.

4. Infection must be relieved promptly in diabetics.

5. It is highly desirable to prepare the non infected patient by a preliminary dietetic (and insulin) treatment to insure freedom from acidosis and a normal blood sugar level.

6. Close co operation between the surgeon and the physician responsible for the treatment of the diabetes is essential to success.

JOHN J. MALONEY M.D.

Meyer W. *On Posture During and Immediately After Operation with Reference to General Anesthesia* Am J Surg 1926 25:1 63

The complications of inhalation anesthesia are due to the aspiration into the bronchial tree of blood, mucus, or mucus during or immediately after operations within the mouth and nasopharynx or of gastric contents as the result of vomiting while the patient is still under the influence of the anesthetic.

To prevent these complications Meyer advocates emptying the stomach and placing the patient in the Trendelenburg position at the first sign of vomiting.

Before the operation is completed the anesthesia should be deepened and the stomach thoroughly washed out. When the patient is returned to his room he should be placed in the Sims position on the stretcher and maintained in that position in bed if the operation will permit it.

The development of thrombosis of the left femoral vein can be prevented by raising the foot of the bed following operation.

HOWARD A. MCKNIGHT M.D.

Bancroft F W, and Rogers C S. *The Treatment of Cutaneous Burns* Ann Surg 1926 1xxvix 1  
Beck, C S and Powers J H. *Burns Treated with Tannic Acid* Ann Surg 19 6 1xvix 19

BANCROFT and ROGERS. Death due to burns may be caused by shock or toxæmia. Deaths from shock occur within from twenty four to twenty six hours and those from toxæmia after from one to three weeks.

The toxæmia appears to be due to the breaking down of tissue with the formation of primary and secondary proteoses, concentration of the blood, and a marked decrease in the blood chlorides.

The treatment of shock accompanying burns consists in the application of external heat, the administration of fluids and liberal amounts of morphine, and blood transfusion.

The treatment of toxæmia accompanying burns is in large measure the same, but must be continued over a longer period of time. It is very necessary to maintain the body fluid balance by proctoclysis or hypodermoclysis.

The local treatment may consist in debridement. In the authors' cases the patient is anesthetized and the area thoroughly cleaned by the removal of all burned tissue and all tissue which is so damaged that it does not bleed actively. A blood transfusion is then given. The wounds are dressed with vaseline gauze.

The disadvantages of debridement are that it is a radical procedure with considerable operative risk to a devitalized patient; the after treatment is very painful; infection is apt to follow, and skin grafting must usually be performed to cover the defect and if this is delayed by infection a scar tissue base may form beneath the granulation tissue.

The tannic acid treatment is based upon the theory that tannic acid coagulates proteins and precipitates the poisonous substances in burned tissue thereby preventing their absorption. There is less pain associated with this method of treatment than any other procedure known and the patient is in relative comfort at all times. It appears to be the method of choice. Since its use, the mortality and the length of hospitalization have been decreased.

In the cases of children with circular burns of the extremities caution must be exercised in attempting to prevent contractures by means of traction since pressure necrosis develops very easily. Careful manual traction or early skin grafting as soon as the slough separates is preferable.

BECK and POWERS. The treatment of burns proposed by Davidson consists in the application to the burned area of compresses saturated with freshly prepared 2½ per cent aqueous solution of tannic acid to produce innocuous coagulum of the burned



protein which, when exposed to dry air will form a parchment like surface over the burn. This method of treatment lessens the toxemia and pain prevents loss of body fluids, limits the amount of secondary infection, produces less scar tissue than other measures, promotes general comfort and forms a scaffold of coagulated protein for the growth of new epithelial cells over the denuded surface.

The tannic acid must be freshly prepared. Small sections of the wound are opened up for inspection at the end of twelve, eighteen and twenty-four hours and as soon as the part is found to have assumed a light brown color all dressings are removed and the wound is left exposed to the air carefully protected against mechanical injury and chilling. Around the eyes a 5 per cent tannic acid ointment is used. It is essential to force fluids in order to maintain the fluid balance of the body. In some cases blood transfusion is beneficial.

The authors have slightly modified this method. Instead of using saturated gauze compresses they spray the burn every half hour with an atomizer containing a 2 1/2 per cent solution of tannic acid until the surface becomes brown. This spray may be used also on the face and around the eyes. When blebs are formed they are opened and the epidermis is removed wherever it separates. Exposure to dry air facilitates the tanning and an extensive burn can be completely covered in sixteen hours with the production of a smooth surface in sensitive pain. The crust thus secured should not be disturbed until it separates.

In deep burns the crust remains firmly adherent to the underlying tissue. In such cases it is advisable to remove the crust in two weeks and place grafts on the base. If the burn is superficial the coagulum can be dried in a day, but if the burn involves the subcutaneous surface the crust remains boggy for several days.

In children a burn involving one seventh of the body surface is usually fatal, whereas in adults a burn involving one third of the body surface is usually fatal.

The most important features of the tannic acid treatment are the control of toxicity, the simplicity of the method and the comfort of the patient.

CYRIL J. GLASPEL, M.D.

#### Westhues. A Modification of the Thiersch Graft (Modifikation der Thierschschen Transplantation) 50 Tag d. deutsche Ges. f. Chir. Berlin 1916

Westhues cuts Thiersch grafts twice as thick as usual and then divides them into parallel strips 3 or 4 mm. wide. By means of an instrument similar to a Deschamps needle the strips are woven through the granulating surface. The grafts take in two or three days. The granulations on top of the portions of the strips that have been drawn under are then carefully removed so that the entire graft is freely exposed. With great rapidity the areas between the strips become epithelialized as is shown by a number of illustrations.

This procedure is applicable only to flat surfaces and is intended as a supplement to the Braun and Pels Leusden methods rather than as a substitute for them. It is emphasized that during the first two days dressings wet with salt solution should be applied to the transplants and should be changed at least twice a day.

STETTINER (2)

#### Fisser. The Use of Arterial Flaps in Plastic Surgery (De la méthode des lambeaux artériels en chirurgie plastique) Paris chir. 1916 xviii 167

Lisser uses flaps with a very slender pedicle made up of an artery and nerves and a thin layer of cellular tissue but no skin. These flaps are sometimes very large and look like large leaves on a slender stem. They do not require section later. They have an excellent blood and nerve supply. The pedicle can be easily twisted to 180 degrees without interfering with the circulation, whereas when one side of a skin pedicle is compressed and the other side is stretched the circulation is obstructed.

The flaps described are excellent for atonic chronically infected wounds. In the face where they are particularly valuable the superficial temporal artery or its ascending branch may be used. In the body there are many arteries which may be employed. One of these is the inferior epigastric.

The artery is carefully located before the flap is cut and a skin incision is made over it. Then an incision is made from the right and another from the left passing under the artery so that a wedge is formed which includes the artery, veins, lymphatics and nerve fibers. The collateral must not be cut too near the trunk of the artery or the small thrombus which obliterates the collateral may extend into the lumen of the artery and partially obliterate it.

AUDREY G. MORGAN, M.D.

#### Geccarelli G. Skin Grafts and the Conditions Which Favor Their Taking and Their Vitality (Innesti cutanei e condizioni che ne favoriscono la vitalità e l'attaccamento) Arch. ital. di chir. 1916 xv 353

The conditions which determine the taking and vitality of a skin graft are many. Some of them are in the graft itself, some in the site at which it is implanted and some in the host. The graft must have retained sufficient vitality to resume the humoral and circulatory exchange necessary for its taking when put in its new position. The vitality of the graft is greatest immediately after it is taken from the donor, before the beginning of those necrobiotic phenomena of asphyxia and defective nutrition which begin very soon and proceed more or less rapidly depending on the milieu in which the graft is kept until it is implanted.

Among the best media which best preserve the vitality of skin grafts are physiological salt solution and Ringer's solution, but even better than these is the plasma of an animal of the same or a different species. The best medium is the plasma of the animal itself.

The volume and form of the graft are important because it is hard to preserve the vitality of grafts beyond a certain size or thickness, and even if grafts which are too large or too thick are implanted immediately after they are taken from the donor it is difficult to re-establish the circulation and they are very apt to undergo necrosis.

The vitality of a graft depends in part also on the way it is taken and the technique used in its application. Each of the different methods has its special indications. A dermo-epidermic graft implanted within the granulation tissue has not as yet been used very frequently but gives excellent service. Illustrative cases are reported.

The taking of the graft depends to a large extent on the bed in which it is implanted. A successful take is most apt to be obtained if the bed is newly prepared or at least freshened to receive the graft and if it is of such a size that the graft fits it exactly. Absolute asepsis, hæmostasis, and postoperative care according to the technical rules are essential.

The chief factor in the taking of the graft is the character of the host, that is, whether the host is the same individual, another individual of the same species, or an individual of a different species. Autoplastic grafts always take if they are alive and the proper technique is observed. Homoplastic grafts take only if the individual differences between the host and donor are reduced to the minimum, as in the case of brothers, or if the graft is endowed with great proliferative vitality like grafts from fetuses or newborn infants. When these conditions are not met, homoplastic grafts always fail to take both in experimental and clinical work. Attempts made so far to change biochemical conditions in the host have not been successful but the condition of the graft may be changed by keeping the graft in the plasma of the host for twenty-four hours. In this way it is possible to make a graft take in an individual who is not related to the donor or who belongs to a different race. Heteroplastic grafts are possible in some of the lower animals but they have always been failures in the higher animals and in man, as have grafts of preserved skin.

AUDREY G MORGAN M D

Rieder, W. Autogenous Blood Injections in Post-operative Pulmonary Complications (Zur Frage der Eigenblutinjektion bei postoperativen Lungenkomplikationen) *Zentralbl f Chir*, 19 6 Jan 205

Autogenous blood injections were given in sixty cases according to the technique of Graser. At first it appeared that they had a very favorable effect, but in a series of cases treated without such injections the curves were exactly the same and similar also to those reported by Graser.

The estimation of the effect of the injections is very difficult because varied conditions are included in postoperative pulmonary complications. The course of postoperative pneumonia, however, is almost always typical, resembling that of broncho-

pneumonia. After an initial attack of fever of 39 degrees C, there is often a marked drop of a lytic nature, but this occurs also when no injection is given. In other cases three and sometimes even a greater number of injections did not have the slightest effect upon the fever or the course of the condition.

TOELLEN (Z)

## ANTISEPTIC SURGERY, TREATMENT OF WOUNDS AND INFECTIONS

Nagel. The Increase in the Antiseptic Action of Corrosive Sublimate in Acid Solutions (Ueber die Erhöhung der antiseptischen Wirkung des Sublimats in sauren Lösungen) *Ztschr f Hyg u Infektionskrankh* 1926 cv 495

On the basis of a series of investigations the author comes to the conclusion that the antiseptic effect of corrosive sublimate like that of other mercury salts, is increased by the addition of acids and acid salts according to the degree of dissociation. Its effectiveness depends upon the mercury and hydrogen ion concentration, each supplementing the other. The mercury is effective as a cation and not as an anion of a complex mercury compound.

Accordingly, the statement made repeatedly in textbooks during the last twenty-five years that hydrochloric acid retards the antiseptic action of corrosive sublimate in the same way as sodium chloride is disproved and the mechanism of action of an acid solution of corrosive sublimate is explained.

GLASS (Z)

Rovida G. Experimental Studies with Lewisite (Ricerche sperimentali con la lewisite) *Sperimentale* 1926 LVII, 5

The author made a study of the two chlorovinyl chlorarsines which are most interesting from the point of view of biological action, viz chlorovinyl dichlorarsine (Lewisite) and dichlorodivinylchlorarsine. He found that these products, both in a state of fine subdivision (alcoholic solution) and in a liquid state, hydrolyze rapidly on contact with water forming hydrochloric acid and the corresponding chlorovinylarsinic acid. Low temperatures have an effect on the course of the hydrolysis, retarding the end of the decomposition.

AUDREY G MORGAN M D

## ANÆSTHESIA

Wright, H W S. Anæsthesia of the Brachial Plexus *Brit J Surg* 1926 VII 160

Practically the entire nerve supply of the arm is collected on the upper surface of the first rib, immediately external to the subclavian artery. In the induction of anæsthesia of the brachial plexus the subclavian artery may be adequately protected by a finger placed on its anterosuperior surface. Injury to the pleura is easily avoided if the injection is made as soon as paræsthesia is obtained. If this is not noticed the point of the needle must always be

made to impinge on the first rib before any of the solution is injected. The author has at hand a suitable syringe and 30 c cm of 2 per cent and a quantity of  $\frac{1}{2}$  per cent novocain solution. Adrenalin is added in the proportion of 3 drops to every 10 c cm of novocain solution used. As a rule the injection is made on the operating table. The needle is introduced at a point 1 cm above the clavicle immediately outside the vein. This spot corresponds to a point 1 cm above the clavicle in the exact midclavicular line. During the introduction of the needle the anatomical relationships of the first rib are borne in mind. As soon as the needle has pierced the deep fascia it is pushed onward about  $\frac{1}{4}$  cm. If the patient is not too sleepy paresthesia is felt. The needle is pushed in until it rests on the first rib and is then gently withdrawn a few millimeters before the novocain is injected. Finally 5 c cm of the anæsthetic are injected just at the outer border of the first rib to block abnormal branches which may join there.

The  $\frac{1}{2}$  per cent novocain solution is then injected in a subcutaneous ring around the arm at the level of the deltoid in order to block the fibers of the cervical plexus. The subcutaneous ring may perhaps be advantageously placed a few inches above the upper margin of the incision whatever the position of the latter.

Brachial plexus block has been found equally effective for all classes of patients. Its results in children have been very gratifying as have those of other types of local anæsthesia.

The method is most useful in major operations about the elbow joint and on the forearm. In operations about the shoulder joint it is difficult to abolish muscle sense in the deltoid and retraction of this muscle sometimes wakens the patient. The procedure described has been used successfully several times in operations on the hand but infiltration of the ulnar and median nerves at the wrist serves equally well.

MORRIS H. KAHN, M.D.

# PHYSICO-CHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Stenstroem W., and Mattick, W. L. A Study of Skin Reactions After Divided Roentgen Ray Dosage *Am J Roentgenol* 1926, xv 513

Recently there has been a tendency among radio therapists to divide the dose over a given area into several portions distributed over as many days. In this way the length of time the patient must remain in an uncomfortable position at one sitting is shortened, the roentgen sickness lessened, and the dosage increased. If the dose to a given area is to be interrupted, it is important to know the effect of its division upon the skin.

To determine this reaction the authors rayed adjacent fields of the same individual. One field was given a 100 per cent dose of 'hard' radiation at one sitting. Other fields received respectively a 120 per cent dose in nine days, a 140 per cent dose in eleven days, a 140 per cent dose in ten days, and a 150 per cent dose in fourteen days. The reactions were about the same or less than those occurring after the 100 per cent dose given at one sitting.

On the basis of their findings, the authors have plotted curves from which it is possible to estimate the amount of radiation required to keep the skin saturated after a full initial dose. The curve indicates that 8 per cent may be given every day, 44 every eighth day, or 50 per cent every ninth day.

The loss of radiation seems to be dependent upon the rapidity of growth of the tissue. Consequently the findings in these cases cannot be used to predict the reaction of children or cachectic or aged patients.

CHARLES H. HEACOCK, M.D.

Grier, G. W. The Roentgen Ray Treatment of Keloid. *Am J Roentgenol* 1926, xvi 22

Although radiotherapy is generally considered to be the best method of treating keloids, there is little agreement with regard to the technique which is most reliable. Having tried various methods at different times during the last fifteen years, the author has come to the conclusion that the most reliable method is the use of unfiltered radiation regardless of the size or thickness of the lesion. This applies only to roentgen ray treatment as Grier has not used radium in a sufficient number of cases to warrant conclusions regarding it.

He tabulates thirty nine cases which he has treated since 1914. Of these, sixteen were cured, eleven improved, and twelve unimproved. Reference to the table shows the constant improvement in the results which followed the change in the technique from moderate filtration of the rays to none.

No treatment should exceed 90 per cent of an erythema dose and the irradiations should be

separated by an interval of from 6 to 8 weeks. In the author's cases the smallest number of treatments necessary was two and the largest number five. Grier uses radiation of a quality corresponding to a 7 in. parallel gap. In the estimation of the dose, attention should be given to the size of the area treated since scattered radiation is of importance when larger fields are exposed.

ADOLPH HARTUNG, M.D.

Russ, S. and Scott, G. M. The Effect of X Rays upon the Rous Chicken Tumor. *Lancet* 1916, ccvi 374

In experiments with many varieties of malignant tumors other than the Rous chicken sarcoma it was found that after these neoplasms were irradiated with one or two lethal doses of the roentgen rays none of them would grow when inoculated into susceptible hosts. On the other hand, similar doses and even larger ones had no appreciable effect on the Rous sarcoma or its virus.

It is possible, therefore, that the animal tumors do not contain a virus similar to that of the Rous chicken sarcoma, or that the susceptibility of their virus to the roentgen rays depends upon the tissues in which the virus exists or that there is some substance essential to the growth of these tumors, at present unrecognized which is easily affected by the roentgen rays.

ADOLPH HARTUNG, M.D.

## MISCELLANEOUS

Wyman, E. T. The Clinical Application of Ultra violet Light. *Boston M & S J* 1916, cxv 396

The quartz lamp can be used as a substitute for sunlight and has the advantage that it is available regardless of the weather, it can be used in doors, and the doses can be more accurately gauged. In the cases of infants the treatments are given with the lamp at a distance of 20 in. from the surface of the body. In the cases of infants with a light complexion the treatments are continued for two minutes at first and then increased two minutes at each treatment up to a duration of twenty minutes. In the cases of infants with a medium dark complexion they are at first three minutes in length and increased each time three minutes. In the cases of negroes they are at first five minutes in length and increased each time five minutes. Sun baths are given in addition.

Rickets is common in children who are seldom exposed to the direct rays of the sun. It can be cured by cod liver oil and ultraviolet light.

Spasmophilia is an institutional condition in which the calcium content of the blood serum is low. Ultraviolet radiation has a favorable influence upon

the symptoms, and the symptomatic relief is associated with a return of the calcium concentration to normal. The administration of from 10 to 20 gr of calcium chloride three times a day in addition to the ultraviolet radiation has been found beneficial.

Ultraviolet radiation has a favorable effect also in tuberculosis of the peritoneal, glandular, and osseous types but should not be used if there is a marked febrile reaction in these conditions. In addition to the radiation, fresh air, proper nourishment and general hygienic care are necessary.

Psoriasis has shown marked improvement under ultraviolet radiation and furunculosis also responds to it favorably. In bronchial asthma of the bacterial sensitization type ultraviolet radiation has been followed by a decrease in the frequency of the attacks and improvement of the patient's condition in all respects.

LEWELLYN I. LEWIS, M.D.

Ferry E. M. The Therapeutic Effects of Ultraviolet Radiation and High Frequency Currents in Animals. *Proc. Roy. Soc. Med. Lond.* 1926, 19: 517. *Sert. Compar. Med.* 50.

The author reports his results with electrotherapeutic agents in the treatment of animals. The

coats of the animals were brushed up to allow the penetration of the light waves to the skin. As there is a great difference in the thickness of the skin in different species, the dosage was regulated accordingly. In making the experiments difficulty was experienced in keeping the animal at a certain distance from the lamp.

In the author's opinion ultraviolet radiation will prove of great value in certain cases that either fail to respond or respond very tardily to the usual medicaments.

The results of ultraviolet treatment on rickets in animals were the same as in man. Moist eczema and indolent wounds responded rapidly.

The treatment seemed greatly to stimulate the growth of the hair but the improvement in the coat was due probably to the improvement in the general health.

Satisfactory results were obtained also in pneumonia and catarrhal distemper. Chorea responded but probably because of the improvement in the general health.

The author has used the high frequency current with good results in paralysis. A number of cases are cited.

LEWELLYN I. LEWIS, M.D.

## MISCELLANEOUS

### CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Renaud, A. Reflections on Cancer Statistic and Demography. *Reu. med. de la Suisse Rom.* 1926 xli, 331

Renaud holds that the cancer increase shown by statistics in most countries is only apparent and due solely to better diagnostic facilities. In this he disagrees with the American writers Park, Hoffman, Williams, Bainbridge, and others, who, he claims, take into consideration only the absolute total number of cancer deaths without going into the details or analyzing the data.

With regard to the influence of civilization, he objects to Hoffman's view that civilization breeds cancer. He states that in savage races there are just as many cases of cancer following chronic irritation, ulcers, etc., as among civilized races. Moreover, in civilized countries a great number of cancers are successfully suppressed by medical interventions. Therefore he is of the opinion that the apparently greater number of cancers in civilized countries is due simply to better diagnostic methods and observations. P. CAMPICHI

Jorstad, L. H. The Action of Lipoid Solvents on the Organism and in the Production of Cancer. *J. Cancer Research* 1926 x 229

When coal tar is injected into tissues there is a progressive hyaline change in the cells.

The action of coal tar and other lipid solvents may be merely the result of the dissolving of a lipid substance of the tissue. The process is destructive rather than constructive.

When cancer has once been induced by the coal tar, it grows independently of the tar. It has been shown by Burrows that cells grow independently in the cultures when they are crowded together in a small amount of stagnant medium supplied by a sufficient amount of oxygen. Embryonic cells begin to grow very quickly, but adult cells grow only after a latent period. Stagnation and cell crowding offer an opportunity for the accumulation of a substance formed by the cells in a concentration sufficient to induce growth. During this latent period the plasma removes from the cells a lipid substance—the ergusia—which acts as a normal growth inhibitor. Therefore cancer may be merely the result of a crowding of the cells in the tissues and a relative reduction of the blood supply of the mass.

The author observed that animals fed on diets varying in the kind and quantity of vitamins content showed different reactions to the coal tar and concluded that Vitamine A is the inhibitor of growth in the normal organism.

The experiments showed that the ergusia removed by the coal tar could be replaced by Vitamine A. Cancer is a tissue poor in Vitamine A. In collaboration with Burrows, the author found that cancerous tissue contains no Vitamine A but a large amount of Vitamine B.

Coal tar merely draws the cells into a stagnant mass and removes from the tissue the ergusia, the normal growth inhibitor, thereby allowing the cells to grow independently and produce cancer.

PAUL W. SWEET, M.D.

Burrows, M. T. Studies on the Nature of the Growth Stimulus in Cancer. *J. Cancer Research*, 1926 x 239

According to the author, cancer is not a reversion of cells to an embryonic type, as has been widely taught, but the freeing of the cells from forces which hold them together. The same conditions which are suitable for the growth of bacteria and unicellular organisms apply to the growth of cancer cells. Unicellular forms of life abound in the stagnant pool and bacteria in crowded media.

It has been found that stagnation and cell crowding are important for the growth of cancer cells, because this growth depends upon the accumulation about the cells of a substance formed by them—the archusia. Archusia is soluble in the circulating fluids of the body, in serum, and in plasma. Function takes place when archusia is maintained at one end of the cell. A cancer cell is a non-functioning cell.

On the basis of these facts the author assumes that cancer may be nothing more than the result of a local crowding of cells in the organism and a relative reduction in the blood supply to the mass thus formed.

Cancer may be produced by coal tar, the X rays, radium, animal parasites, bacteria, inflammatory processes, and congenital defects.

In previous studies, Burrows showed that body cells migrate by liberating a lipid substance, the ergusia, which is readily absorbed by proteins and fats. Jorstad found that drops of coal tar placed in the tissue dissolve the ergusia and draw the tissue cells to them, away from their intercellular substance and blood vessels. If too great an amount of ergusia is taken away from the cells they degenerate.

If degeneration fails and a sufficient number of cells are crowded together in a stagnant mass, a sufficient amount of archusia may form for growth.

Cancerous tissue contains large quantities of the growth stimulant, the archusia. The Vitamine B values vary in the same proportion as the archusia values. Wright has shown that archusia is dialyzable as Vitamine B is dialyzable.

It has been previously shown that Vitamine A inhibits the growth of cells. Cancerous tissue contains no Vitamine A. Cancer and a growing bacterial culture are identical in that both contain no Vitamine A and a high value of Vitamine B. In the normal organism the value of Vitamine A is high.

Cancer is therefore only the result of a local vitamin imbalance in the organism. It may be produced by anything which increases the content of Vitamine B and removes the content of Vitamine A in the tissues. I. A. W. SWEET M.D.

### GENERAL BACTERIAL, PROTOZOAN AND PARASITIC INFECTIONS

**Martin L.** A Purified Antitetanus Serum (Sur un sérum antitétanique purifié) *Bull. et mém. Soc. nat. de chir.* 1926 lii 128

With the use of the new purified antitetanus serum late reactions are rare. When the serum is injected subcutaneously anaphylaxis never occurs. When it is diluted with three parts of normal salt solution and injected slowly, repeated intravenous injections may be given without danger. However the intravenous route should be reserved for cases of actual tetanus.

As the immunizing effect of antitoxin is transient anatoxine (Ramon) should be employed when a prolonged prophylactic effect is desired as in the army. This is a toxin in which the toxicity has been destroyed by treatment with heat and formalin. In the army, anatoxine has been combined with typhoid vaccine to produce immunity to both tetanus and typhoid. ALBERT F. DE GROOT M.D.

### SURGICAL PATHOLOGY AND DIAGNOSIS

**Gurewicz N. A.** The Vascularization of Scar Tissue According to the Findings of Microcapillaroscopy (Narbenvascularisation nach den Ergebnissen der Mikrocapillaroskopie) *Verhandl. d. 16. russ. Chir. Kong.* Moscow 1925 p. 130

In a special chamber constructed for microcapillaroscopy the author examined more than 157 skin scars. He found that the vascularization of scar tissue corresponding to the normal vascularization of the skin occurred in various ways. He determined the central and peripheral ends of an arteriole by cutting through it. In wounds the margin connected with the central ends of arterioles is better supplied with blood than the margin supplied by the peripheral ends and therefore the vascularization is more profuse in the former than in the latter. This was true in 88 per cent of the specimens examined. In 10 per cent definitely one-sided vascularization was found and in 2 per cent there was equal vascularization on both sides.

The entrance of the blood vessels into the scar tissue occurs either parallel with the body surface perpendicular to it or at an angle with it. In the first case the vessels branch and connect with one another. In the second there can be seen a large point from which thinner vessels run parallel into the scar tissue. In the third case the vessels form regular rows of loops in the scar tissue.

It is evident therefore that the character of the vascularization of scar tissue depends upon the direction of the blood vessels and blood flow in the region of the wound. KORNMAN Y. (L)

### EXPERIMENTAL SURGERY

**Milanesi E.** An Experimental Study of the Biology of Fresh and Fixed Implants of Fibrin and Blood Clots (Ricerche sperimentali sulla biologia degli innesti di fibrina e di coagulo sanguigno freschi o fissati) *Arch. i. chir.* 1926 xvi 413

In experiments on rabbits Milanesi implanted in various organs or in the muscles clots of blood and of fibrin some of which were fresh and others fixed in 90 per cent alcohol. The report includes detailed protocols of these experiments and colored photographs showing the results.

The author found that it was possible to graft fresh or fixed bits of fibrin or blood clot into parenchymatous organs or into muscle. Fresh fibrin and blood clot and fixed fibrin were ordinarily replaced quite rapidly by a proliferative vascular and connective tissue originating from the tissues of the host. Fixed blood clot was generally encapsulated in a connective tissue membrane produced by a reaction on the part of the host and remained unchanged for a long time, presenting all of the characteristics of an inert foreign body. The fixed blood clot was not penetrated by any newly formed vascular or connective tissue.

The graft of fixed blood clot did not show any direct relation to the collagen fibrils of the reactive connective tissue of the host and therefore did not conform to Nageotte's theory of the origin of stroma and its independence of vital phenomena. Neither did the results of these experiments support Nageotte's theory of the revivification of the stroma of grafts of fixed material or show that the final outcome is identical with fresh and fixed implants. The histogenetic laws which govern grafts of fresh fibrin or blood clot are the same in their different phases and their final outcome as those governing the repair of aseptic wounds and the organization of thrombi.

In the author's opinion it is possible that fresh and fixed implants of fibrin or blood clot may prove useful as plastic material in reparative surgery on certain organs and tissues.

ALDREY G. MORGAN M.D.

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NOTE—THE BOLD FACE FIGURES IN BRACKETS AT THE RIGHT OF A REFERENCE INDICATE THE PAGE OF THIS ISSUE ON WHICH AN ABSTRACT OF THE ARTICLE REFERRED TO MAY BE FOUND

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## EDITOR'S COMMENT

THE question of malignant disease of the lachrymal gland and of the nose and paranasal sinuses presents a particularly interesting problem both from the point of view of pathology and of treatment. The complex nature of such growths and the difficulty of assigning them to definite pathological groups have long been recognized. Because of their accessibility, it would seem that their presence should be recognized early in the course of the disease and that they would afford a peculiarly favorable opportunity for determining the efficacy of irradiation and other non surgical methods of treatment. Four abstracts in the present issue of the INTERNATIONAL ABSTRACT OF SURGERY two by Pfingst (p. 87) and Strada and Zavalia (p. 88) upon tumors of the lachrymal sac, and two by Quick (p. 93) and Klestadt and Martenstein (p. 92) upon malignant disease of the nose and paranasal sinuses, summarize some recent contributions concerned with this problem. Because of the failure of intensive irradiation to control the growth and because of occasional serious roentgen injuries Klestadt and Martenstein recommend irradiation in fractional doses. Quick recommends particularly the use of buried radium emanation in gold tubes—a method which permits both the use of very small tubes and exclusion of the irritating beta rays. This application is supplemented by external doses of X ray or radium or both and later by crutery removal of the irradiated tumor tissue.

Codman's resume of the work of the Registry of Bone Sarcoma and his discussion of the symptoms and course of osteogenetic sarcoma (p. 133) represent some of the helpful results of his earnest efforts to collect and study every reported case of bone sarcoma. The fact that he has been able to study 650 cases indicates not only the magnitude of the task he has undertaken, but also future possibilities in the development of our knowledge of bone tumors. As Codman has pointed out so often and earnestly, the greatest hope for the successful attack of the problem of malignancy lies in the co operative efforts of the entire medical and surgical profession.

Floris' paper upon obliteration of the ureter in gynecological practice (p. 129) touches upon an important problem in gynecological surgery. Gayet and Peycelon's warnings with reference to pyelonephritis as a postoperative complication of prostatectomy (p. 131) emphasize a possible serious factor in a condition all ready difficult of treatment.

Codman's observations of the relation of the sympathetic nervous system to skeletal tonus (p. 99) and Brechot's report of the results of laminectomy in cases of "idiopathic" incontinence of urine (p. 98) concern neurological problems of interest and importance. Rollier's description of his method of treatment of Pott's disease (p. 135) indicates the results that may be attained with heliotherapy applied under suitable conditions.

# INTERNATIONAL ABSTRACT OF SURGERY

AUGUST, 1926

## ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

### EYE

Jackson E. Recent Mechanical Injuries to the Eyes Their Examination and Management *Northwest Med* 1926 cvv 138

Jackson calls attention to the fact that the effects of contusions of the eyeball may be unrecognized in a superficial examination because external evidence of grave internal lesions may be absent, and that there may be no evidence of serious trouble at the first ophthalmic examination because such injuries as fracture of the orbit do not immediately affect the eyes. Contusions may cause cataract without rupture of the capsule, but the opacity may not be noted for months. The examination following a contusion should therefore include inspection, palpation for changes in tension, and X ray examination for fractures and foreign bodies.

Perforating injuries may have few external signs upon which the diagnosis may be made. Small wounds close quickly, many parts do not bleed and the tension may be restored in a few hours. Two lacerations may occur from the same accident, as when a shot passes through one side and out the other. The nature of the missile and the direction from which it came should be determined. The presence or absence of a foreign body must be established definitely. Because of the long exposure made so frequently in roentgen ray examinations foreign bodies may not be detected by the X ray if they are very small. As a rule all foreign bodies in the eyeball should be removed as soon as possible. The conditions under which a departure from this rule may be considered are very rare. VIRGIL WESCOTT M.D.

Durr S A. The Operations for Glaucoma. *Am J Ophth* 1926 35 ix 174

This report was a thesis submitted for the degree of M.S. in Ophthalmology at the University of Pennsylvania. The better known operations for glaucoma are compared as to their value in different types of cases, and an attempt is made to determine

the best operation for each type of glaucoma. The conclusions are based upon a survey of the literature. Iridectomy, trephining, iridotaxis and cyclo dialysis are fully covered, while the Lagrange operation, peripheral iridotomy, iridencleisis and cyclectomy are discussed briefly. The use of adrenalin in glaucoma as compared to posterior sclerotomy is reviewed.

The conclusions drawn from fifty-eight original articles are as follows:

1. No one operation can be used in all cases.
2. In acute glaucoma the procedure of choice is iridectomy, with the use of adrenalin or a preliminary posterior sclerotomy, if needed. Trephining or iridotaxis is permissible.
3. The Eliot trephine should be used in chronic non congestive glaucoma, especially with contracted fields. Iridotaxis may be done. Cyclodialysis may be tried first, the trephine being reserved for resistant cases.
4. Iridectomy should be performed in glaucoma due to swelling of the lens.
5. Buphthalmos is best combated by trephining or repeated posterior sclerotomies.
6. Cyclodialysis should be used in glaucoma due to disease of the retinal vessels and may be done in the cases of patients who have chronic conjunctivitis.
7. Adrenalin has been found of value in ophthalmoscopic examination, as a therapeutic agent and an aid in operation.

Pfingst A O. Neoplasms of the Lachrymal Gland with a Report of Three Cases. *Arch Ophth* 1926 lv 139

Warthin was the first accurately to describe the pathogenesis of tumors of the lachrymal gland. The first case of such a tumor was reported by Hildanus in 1598. The first authentic case in which a microscopic examination was made was reported by Becker in 1867.

Warthin's report covers all of the cases in the literature up to 1921, a total of 132. The neoplasms



in these cases are described by widely different terms ranging from simple hypertrophy to malignant growths of epithelial and fibrous nature. According to the diagnosis they represented forty four varieties of tumor. Warthin concluded however that the majority were mixed tumors of endothelial origin identical with the slowly growing mixed tumors of the salivary glands. In his opinion these new growths are peculiar to the serous variety of gland structure which is found in the lachrymal and parotid glands and a part of the submaxillary glands. The proper term for them he believes is endothelioma.

Haslinger also accepted the theory of the endothelial origin of these tumors but Verhoeff in a report of five cases stated that they arise from epithelial cells. Greeve who completed the bibliography after Warthin's report classifies them into two main groups (1) mixed tumors and (2) tumors characterized by overgrowths of small round cells in the gland stroma a condition known as Mikulicz disease. In the first group he places the following types:

1. Tumors in which the gland tubules have a scant amount of fibrous or myxomatous tissue some lymphoid tissue some flattened epithelium some prickly cells and often cartilage which are surrounded by a rather dense capsule of white fibrous tissue and are usually slow in development. Such tumors are not associated with enlargement of the glands and have never been known to lead to general metastasis. They usually occur in adults. After removal they show no tendency to recur.

2. Tumors made up almost entirely of myxomatous stroma containing some branch columns of cells resembling epithelial cells.

3. Tumors of the cylindroma type which microscopically resemble adenocarcinoma never contain cartilage and have little or no surrounding capsule. Clinically they are the most malignant.

Mikulicz disease is apparently not a neoplastic growth but merely an enlargement of the gland due to cell infiltration.

The latest and most comprehensive contribution on this condition was made by Lane in 1922. In a very careful survey of the literature Lane was able to find only 256 authentic cases.

The author believes that the nomenclature of lachrymal gland tumors should be based solely on their microscopic make up and that the species of the tumor should be determined by the nature of the prototype cell.

The clinical course of tumors of the lachrymal gland varies considerably. The majority of such growths develop very slowly in the early stages, a long period of inactivity preceding their active development. It is probable that the slowness of their growth is due to the dense capsule.

These tumors are seen usually in persons past middle age. No doubt they begin earlier but because of their slow growth and their lack of symptoms they are unnoticed until they reach a considerable

size and cause exophthalmos. The average size of those that have come to operation has been that of a pigeon's egg but some were as large as a hen's egg. Occasionally there are several smaller tumors adjacent to the large one. Most lachrymal gland tumors are nodular and firm. In a few cases a history of early pain has been given. Some patients complain of transitory diplopia and blurring of vision. Ultimately vision may become quite defective as the result of astigmatism from the pressure of the tumor on the cornea, papillitis, hyperemia of the papilla or optic nerve atrophy.

A clinical division of the tumors into benign and malignant is impossible because they are practically all potentially malignant.

Early and complete removal of the entire mass with retention of the eyeball is the indicated treatment. The method of removal depends upon the size of the tumor. In a few cases in which it is large the Kroenlein operation is indicated. No case of recurrence after the Kroenlein operation has been reported. The removal of quite large tumors can be effected readily and with little or no deformity through an incision along the orbital edge.

L. L. McCoy, M.D.

**Strada F., and Zavalia A. U. Malignant Tumors of the Lachrymal Sac.** (Contribución al estudio de los tumores malignos del saco lagrimal). *Semanas Méd.* 1925, XXXI, 1100.

A man of 57 years had noted increasing lachrymation of the left eye for several months. For several years he had had chronic nasal catarrh, maxillary sinusitis on the left side and mucous polyps in the nasal fossa. These had been cured by operation but recently the catarrh and nasal polyps had recurred. Shortly before the beginning of the epiphora a hard round swelling appeared in the left lachrymal sac and gradually increased in size. Pain then began in the left lachrymal region and extended backward involving half of the head and increasing in severity.

Examination revealed in the lachrymal sac a fibrous tumor over which the skin was freely movable. The neoplasm extended backward and seemed to be incorporated with the internal wall of the orbit. The lachrymal canal was permeable. The Wassermann test was negative.

The tumor and lachrymal sac were removed under local anesthesia. This was not difficult as there were no adhesions except for a short distance to the periosteum of the floor of the orbit. When the perosteum was dissected off, the bone appeared normal.

Histological examination of the tumor showed it to be a carcinoma. The patient was given one roentgen treatment and then went to another town where he was given one irradiation with radium but refused to continue the treatment because of the intense pain which followed it. He died of recurrence in the maxillary sinus and a metastasis in one kidney about a year later.

Only twenty five such tumors have been reported in the literature. They frequently follow chronic

**dacryocystitis** There is a pretumoral stage of dacryocystitis or epiphora a second period in which the tumor is visible and a third period of generalization and cachexia A differential diagnosis from dacryocystitis is impossible in the first stage and the diagnosis is seldom made before the tumor appears In the majority of the cases the condition has been fatal and in the few in which the operation seems to have resulted in a cure it is too early to determine whether the cure is permanent The author believes that roentgen and radium therapy may be effective Although his patient refused to continue the irradiation treatment, the tumor did not recur at its original site

AUDREY G MORGAN M D

**Nutt A B The Result of Treatment by Artificial Light on Phlyctenular and Other Tuberculous Lesions of the Eye** *Brit J Ophthalmol* 19 6 1, 138

Tuberculosis and rickets have yielded to constant exposure to sunlight when other factors such as the vitamins have been supplied In cases of phlyctenules, which occur most frequently in persons with the strumous diathesis those with poor living conditions and those with a faulty diet treatment with the ultraviolet rays has given good results when vitamins have been supplied in the form of cod liver oil and hypophosphites The exposure to the quartz lamp is at first ten minutes long and then gradually extended to an hour In thirty cases which have been under observation for a year the results have been gratifying

VIRGIL WESCOTT M D

**Adrogué, E. Dendritic Degeneration of the Cornea** (Sobre la degeneración en malla o en raja de la córnea) *Rev soc argent de oftalmol* 19 5 1 33

Fuchs classifies dendritic degeneration of the cornea as a dystrophic process of the cornea due to disturbance of nutrition It is differentiated from inflammation by the fact that it has no objective signs of inflammation its course is progressive while inflammation, after an acute period subsides, there is no infiltration of leucocytes, and only degenerative processes, such as fatty degeneration (arcus senilis), calcareous degeneration (ribbon shaped keratitis), or hyaline degeneration (Groenouws keratitis) are found

Adrogué reports the case of a man 37 years of age who had had attacks of redness of the eye and photophobia lasting from ten to fifteen days and occurring two or three times a year for a period of ten years His chief complaint, however, was a progressive decrease of vision Lateral examination with ordinary illumination showed a diffuse opacity of the cornea The slit lamp revealed a network of white lines which were most abundant in the median zone between the edge of the cornea and its center The picture of this network was unusually clear

In all of the cases seen by the author there were recurrent attacks of keratitis characterized by photophobia which was generally intense ciliary and conjunctival injection the latter generally not very

intense, pain in the ciliary region extending to the region supplied by the ophthalmic branch of the trigeminal nerve, and frontal and hemispherical headache Instillation of fluorescein showed a loss of epithelium in the form characteristic of geographic herpes These lesions and classical herpetic keratitis cannot be confused with any other superficial lesion of the epithelium of the cornea by one who has had experience with the slit lamp The lesion is bilateral

The author believes that dendritic keratitis and Groenouws keratitis are the same condition and that they both follow attacks of herpetic keratitis

AUDREY G MORGAN M D

**Roeths A On the Question of Phaco Anaphylactic Endophthalmitis** *Arch Ophthalmol* 1926 14, 103

Roeths says that to prove the occurrence of phacoanaphylactic endophthalmitis in human pathology the following questions must be answered Can animals be sensitized to lens protein by injection into the eye? Is the rupture of the capsule in sensitized animals followed by local or general reactions? Can own lens protein of the animal injected into the eye or elsewhere cause hypersensitivity?

Krusius, Roemer, and Gebb found that intra cardiac or intraperitoneal reinjections of small quantities of different proteins including lens protein after primary injections into the vitreous caused anaphylactic shock

The results of experiments to determine whether rupture of the capsule in sensitized animals is followed by a local or general reaction have been contradictory Krusius found very slight anaphylactic reactions while Roemer and Gebb observed no general anaphylaxis De Waele sensitized rabbits to lens protein and performed a dissection two, three, five, eight, or twelve days later He found that the sooner the dissection was performed after the injection the stronger the reaction Verhoeff and Le moine reported marked ocular reactions after dissection in four of seven guinea pigs which were sensitized with one subcutaneous injection of lens protein

In experiments to determine whether own lens protein of the animal injected into the eye or elsewhere can cause hypersensitivity Uhlenhuth and Handel and later, Mita succeeded in provoking anaphylactic shock in guinea pigs which were sensitized to their own lens protein Krusius observed slight anaphylactic symptoms in guinea pigs after the introduction of lens fragments from guinea pigs into their anterior chambers or the performance of dissection first on one eye and later on the other Roemer and Gebb were unable to obtain auto anaphylaxis in any way Experiments have shown that hypersensitivity to own lens protein can be produced only by giving several injections of large doses of homologous lens protein

A summary of the results of experiments on animals with homologous lens protein therefore shows that endophthalmitis phacoanaphylactica is not proved

In conclusion Ruskin emphasizes the importance of the role played by maxillary sinusitis in the production of nasal obstruction chronic laryngitis, and bronchitis in children.

MIRHOFFER cites the fact that while it has been known for many years that nasal polyps are an extension of a primary disease in the antrum hyperplasia of the antrum without extension of polyps into the nose has not been recognized very often. He describes a form of hyperplastic disease of the antrum in which there are few if any pathological changes in the nasal mucosa namely, primary hyperplastic maxillary sinusitis.

Hyperplastic maxillary sinusitis is of the following four types:

Antrum hyperplasia with extension of polyps into the nose combined with suppuration.

Antrum hyperplasia with extension of numerous polyps or a solitary polyp into the nose but without a purulent discharge.

Hyperplasia of the antrum without extension of polyps into the nose and with or without mild pathological changes in the nasal mucous membrane and the other sinuses (primary hyperplastic maxillary sinusitis).

Hyperplasia of the recesses of the antrum only (recess hyperplasia).

Following a discussion of the pathology and symptoms the author draws the following conclusions:

1. Maxillary sinus hyperplasia was always found when an extensive nasal polyposis was present.

2. Hyperplasia of the antrum may be present many years without causing symptoms referable to the antrum.

3. The failure of the removal of pathological changes in the nose to give relief should direct attention to the antrum.

4. Hyperplastic ethmoiditis of a mild type may be associated with gross hyperplastic changes in the maxillary sinuses.

5. The roentgenogram will be found of aid in arriving at a conclusion as to the advisability of exploring the antrum.

6. An exploratory opening is often the only means of determining the presence or absence of hyperplastic changes within the cavity of the antrum.

7. Hyperplastic changes in the antrum are present more often than has been hitherto suspected.

8. If the possibility of antrum hyperplasia were always borne in mind and the cavity investigated before the performance of an intranasal sinus operation the results of intranasal sinus surgery would be more satisfactory. A. R. HOLLENDER, M.D.

Klestadt W. and Martenstein H. Combined Operative and Irradiation Treatment of Cancer of the Nose and Accessory Sinuses (Die kombinierte operative und radiologische Behandlung der Nasen Nebenhöhlenkrebs). *Beitr z klin Chir* 1925 cccviii 626.

The authors report upon fifty eight cases of malignancy of the nose and accessory sinuses seen during a

period of fifteen years. Most of the patients were between 50 and 60 years of age. In forty nine cases the neoplasm was a carcinoma and in nine a sarcoma. More than half of the patients complained of coryza with nasal obstruction. In 36 percent polyps were found. Nasal polyps and internal nasal cancers both follow chronic irritation of the nasal mucosa. The antrum of Highmore and the anterior portion of the ethmoid bone always contain pus.

The treatment requires: (1) radical removal of the growth (2) simultaneous radical operation on all the diseased accessory sinuses (3) irradiation. Internal cancer occurs most frequently in the upper part of the nose. Therefore the best incision for exposure of the operative area is the Weber incision for resection of the maxilla which is carried upward along the supra orbital margin along the lines of the Killian incision. The facial wall of the antrum of Highmore, the lateral wall of the nose with the aperture, the anterior wall of the sphenoidal sinus, the orbital wall of the frontal sinus and the mucosa of all the accessory sinuses are removed and the tumor masses curetted with a sharp curette. Of the hard palate which is essential for nutrition and speech no more is removed than is absolutely necessary. The dura and the structures of the pterygopalatine fossa are critical sites. The suture of the wound is confined to the eyebrow, the alar nasi and the vestibule of the mouth in order to leave a portal of entry for the subsequent irradiation.

Of the fifty eight cases thirty eight were subjected to irradiation treatment consisting of roentgen or radium irradiation alone and in combination. Sixty four operations were done on these fifty eight patients with a total mortality of 7.8 percent. The dangers of the operation, anesthesia, hemorrhage, and meningitis may be decreased by conduction anesthesia of the second branch of the trigeminal nerve and the ethmoidal nerve injections around the blood vessels to secure anesthesia, and good drainage of the wound secretions.

Four of the patients may be considered as cured after freedom from recurrence for five years. One patient had a local recurrence after three and one half years and another after five and one half years. The majority (53.5 percent) showed a recurrence within the first year. Metastases are not often observed but when they occur they are found most frequently in the bones. The advisability of removing the lymph nodes is difficult to decide because of the rarity of metastases and the fact that recurrences are usually local. Since the glands serve as the recipients for the cancer cells mobilized during the operation it seems wise to operate on them only after a few days.

With regard to irradiation treatment it is still undecided whether the administration of relatively small doses at intervals of several weeks over a long period of time or intensive irradiation is best. However the failures of intensive irradiation according to the method of Wintz and the occasional serious roentgen injuries resulting from this method justify

irradiation in fractional doses. The authors have obtained the best results with doses of one third to two thirds of the skin unit dose given with the use of a filter of 3 or 4 mm. of aluminum. GRIESSMANN (Z.)

**Quick, D. The Use of Radium and the X Rays in the Treatment of Malignant Diseases of the Paranasal Sinuses.** *Surg., Gynec. & Obst.* 1926 **41**, 46

The proper application of radium and the X rays in the treatment of malignant diseases requires an accurate knowledge of the histological structure of the tumor, its size and shape, its relation to adjacent structures, and the presence or absence of infection.

The peculiar anatomy of the paranasal sinuses which favors inflammatory processes is an important factor in the causation of malignant growths in these structures. Inflammatory processes alter the normal type of tumor growth and influence unfavorably the protective cellular reactions in the surrounding normal tissues.

Quick believes that the complex embryology of the parts under discussion affords an opportunity for tumors to originate from numerous developmental anomalies, thus explaining the wide range of tumor types found.

The most common malignant growth occurring in the sinuses is carcinoma of the maxillary antrum. Squamous cell carcinoma usually represents a secondary invasion of the antrum, but may arise there primarily from lining membrane cells altered or flattened by a previous inflammatory process.

Certain basal cell tumors, round cell carcinomata of atypical structure, and sarcomata of various types also occur at different points in the paranasal sinuses. As a rule, such involvement is only a part of a more generalized disease.

When the cases are seen by the surgeon, the condition is almost invariably far advanced, having been considered inflammatory too long. Biopsy or earlier surgical exploration of the sinuses would result in the saving of many lives.

Radium and the X rays have proved of value in the treatment of malignant tumors of the paranasal sinuses. In the experience of Quick, a combination of surgery and irradiation with radium and the X rays gives the best results. The physical agents are depended upon to deal with the new growth directly, and surgery is used to provide access and drain age.

Treatment with the X rays alone is not sufficient to control the growth in the paranasal sinuses except, perhaps, in cases of such unstable tumors as lymphosarcoma. The X rays are employed for external radiation. For direct application to or into the growth radium is the agent of choice. The method depends upon the requirements of the particular case, but the irradiation must be applied accurately and uniformly throughout the tumor and in sufficient amount to produce a maximal reaction compatible with viability of the surrounding normal tissues.

For several years Quick and his associates have employed bare tubes of radium emanation very extensively. During the past year, they have found it possible to prepare gold emanation tubes scarcely larger than the bare tubes or glass emanation tubes. These have all the advantages of bare tubes minus the beta radiation. By means of them it is possible to bury filtered radium emanation, obtain a prolonged intense gamma radiation, and avoid the severe inflammatory reaction which always follows the use of the beta rays.

The technique of applying the tubes is described. The internal applications are almost always supplemented by external doses of the X rays or filtered radium or both.

With regard to the choice of method in removing the irradiated tumor tissue, Quick states that the use of the scalpel and curette is bloody and necessitates too much manipulation of the tissues. The old fashioned cautery and soldering irons are clumsy and produce too much heat. Coagulation of the entire area by means of the high frequency cautery, and removal with a curette or the high frequency cutting needle gives the desired result with minimal trauma.

Metastatic cervical nodes secondary to the various types of carcinoma encountered in the paranasal sinuses are treated in the same manner as metastatic nodes secondary to intra oral carcinoma—that is, by a combination of the X rays, radium, and surgery.

Of 100 cases seen between 1916 and the present time all but twenty eight were too far advanced for any treatment except palliative measures. In seven of the twenty eight operable cases the eye was removed and the antrum cleaned out from below. Of the total group of patients fifty six are known to be dead, twenty two cannot be traced and are assumed to be dead, seven were treated too recently for the results to be known, and fifteen present no clinical evidence of any malignant disease processes after from nine months to eight years.

A. R. HOLLENDER, M. D.

## MOUTH

**Brockbank, E. M. Dental Sepsis and Septicæmia.** *Brit. M. J.* 1916 **1**, 56

Illness secondary to focal dental infection may arise from root abscesses, from absorption of the alveolar process of the jaws with pyorrhœa, and from tartar. In general there are two types of affections caused by dental sepsis—apyrexic conditions, such as myositis, fibrositis, neuritis, arthritis, phlebitis, anæmia, and myasthenia cordis, and pyrexial affections such as acute throat inflammation, arthritis, bronchopneumonia, and septicæmic conditions.

The author believes that in cases of obscure debilitating diseases an X ray examination of the teeth should be made and all diseased teeth should be extracted.

GEORGE R. McAULIFF, M. D.

### Quick D The Treatment of Carcinoma of the Tongue *Brit J Radiol* 1926 **xxi** 81

Epidermoid carcinoma of the tongue is one of the most difficult types of malignant disease to treat because of the muscularity of the tongue its rich blood and lymph supply and its mobility the age of the patient and the presence of mixed oral infection

As surgery has not been particularly encouraging even when an almost perfect technique has been used radium and the X rays have been employed in the hope of improving the results

For the primary lesion the author recommends preliminary external radiation with the X rays or radium packs to inhibit the growth of the lesion and prevent the implantation of tumor cells in normal tissue

Strict regard should be paid to oral hygiene. Quick introduces into the lesion bare tubes 3 by 0.3 mm in size and containing 1 mc which give 132 mc hrs of radium energy in about a fortnight. To prevent the irritative and painful destructive effects of the beta radiation he now employs gold capillary tubes. The tubes produce a painful reaction for from four to eight weeks but their use is justified by the end results.

If the patient is unable to withstand the radical treatment described milder forms of radiation are combined with surgery. Only one cycle is given. If this proves insufficient the prognosis is decidedly unfavorable. If an extensive slough seems imminent the external carotid artery is ligated with the lingual and facial arteries under local anesthesia.

Operative measures are advocated also for cancer developing on syphilitic glossitis.

In the treatment of cervical lymph nodes the author prefers intensive preliminary radiation followed by surgery. He subjects every case immediately to heavy external radiation over both sides of the neck preferably with radium or if this is economically impossible with the X ray. If no evidence of invasion is noted a second radiation is given as soon as the skin will stand it. As the X rays act especially on connective tissue and radium acts especially on capillary blood vessels the combination of the two produces a more uniform and generalized reaction than either alone. When a node is firm but movable a radium pack is added a complete unilateral surgical dissection is done and bare tubes are buried especially where lymph channels have been severed. If the node is fixed surgical dissection is rarely done as the capsule has been perforated. Under such circumstances it is wiser to use external radiation alone or to follow with surgical exposure and direct implantation of bare tubes.

Of 474 patients treated by the author slightly over 20 per cent were rendered clinically free from the disease and a considerable number were relieved even though their lives were not saved. In these cases which were unselected the percentage of clinical cures was approximately the same as that obtained by surgery in selected cases. Quick regards

the X rays and radium as valuable additions to surgery rather than as substitutes for it.

GEORGE R McCLIFF M D

### NECK

#### Jura V Haemorrhagic Cysts of the Neck (*Città ematica del collo*) *Pol lin* Rome 1925 **xxxii** sez chir 501

Jura reports the case of a 20 year-old woman who thirteen days after her first delivery about two years and a half ago noticed a swelling about the size of a walnut in the lower part of the left lateral cervical region near the supraclavicular fossa. This growth was soft and elastic and covered with normal skin. It did not pulsate. It increased slowly and progressively in size but did not cause any pain or other symptoms. By the end of a year it had reached the size of a small egg. It was then punctured twice about a liter of dark blood being evacuated. Two months later the swelling had regained its former size.

During the patient's second pregnancy the tumor did not change much in size but after delivery it grew again and there was a pulling pain in the left shoulder on use of the arm. Under novocain anesthesia an incision was made parallel with the posterior border of the sternocleidomastoid. The cyst which lay between this muscle and the trapezius was easily isolated and removed. It was not connected with the internal jugular. The transversalis colli artery which was attached to its posterior surface was sectioned.

Histological examination of the cyst wall showed that it had the structure of a vein wall which had been changed by endophlebitis causing considerable thickening of the intima. The cyst was evidently a hemorrhagic cyst due to phlebotasis of the transversalis colli. Jura suggests that the weakness of the vein appearing subsequent to the pregnancy may have been congenital.

Haemorrhagic cysts of the neck are generally located in the lateral cervical supraclavicular, carotid submaxillary or subhyoid region between the median and deep cervical aponeuroses. They never show true expansive pulsation but if they are connected with an artery pulsation may be transmitted to them.

They very rarely cause pain. They are differentiated from solid tumors by their consistency from aneurism by their lack of pulsation from cavernous angioma by their lack of erectileity and from soft tumors and other forms of cysts by the findings of exploratory puncture.

The treatment is radical removal of the cyst after ligation of the vessel on which it is implanted. In some cases it may be necessary to remove a section of the vein. Adhesions may be present but often a plane of cleavage may be found. Methods of bringing about coagulation by chemical agents are dangerous as they may cause embolism.

AUDREY G MORGAN M D

**Harburger, A** An Anatomical Clinical and Roentgenological Study of the Normal and Abnormal Hyoid Apparatus in Man (Étude anatomique clinique et radiologique de l'appareil hyoïdien normal et anormal chez l'homme) *Arch internat de laryngol* 1925, xxv, 433 1047

The hyoid apparatus is formed by fusion of the second and third branchial arches and consists of a ligament stretched between two bone processes. In the newborn infant it is made up of a short styloid process still containing in its axis a remnant of Reichert's cartilage, the stylohyoid ligament two or three times the length of the process which does not have any cartilaginous inclusion, and the lesser cornua of the hyoid bone.

The abnormal form consists of a chain of two three or four bones connected by short ligaments or bony articulations. This form is more common than is generally supposed.

The piece on which the styloid muscles are inserted should be called the 'stylohyal segment' whatever the length and mobility of the piece which articulates with the temporal bone. The insertion of the stylomaxillary ligament is less constant.

The anomalous hyoid structure was formerly found chiefly in old subjects because it was discovered by chance at autopsy but clinical and roentgenological examinations reveal it in young persons. The long styloid process without a trace of articulation which is sometimes found in old persons is different from the hyoid apparatus with segments differentiated and articulated. The anomaly is unilateral in the majority of cases and when it is bilateral is rarely symmetrical. It is best explained by heteromorphosis alone or in combination with arrest of development.

As a rule the anomalous hyoid apparatus remains clinically latent. When it does become manifest the chief symptom is painful dysphagia. In the diagnosis palpation of the pharynx is indispensable and should always be practiced before any operation is performed on the tonsils. Roentgen examination is also necessary as it is the only method of discovering the condition when it is latent. The picture should be taken in profile with the head extended and the ray centered on the angle of the jaw. One picture should be taken on the right side and another on the left. The most frequent error in diagnosis is confusion of the condition with a cartilaginous nodule or a calculus in the tonsil but in the latter case the hard tissue is found within instead of outside the tonsil and is movable with and enucleated with, the tonsil.

Resection of the styloid process always brings about recovery. In spite of the septic condition of the mouth and the great susceptibility of the peripharyngeal tissue the natural route seems to be best for the operation. **AUDREY G. MORGAN, M.D.**

**Arnell, J. R.** The Great Importance of the Thyroid in Relation to Certain Varieties of Heart Disease *Colorado Med* 1926 xliii 111

Arnell emphasizes the importance of early diagnosis and treatment of thyroid disease to prevent

the serious cardiovascular complications resulting from abnormal thyroid activity. Every examination should include a careful inspection and palpation of the neck and when possible, this should be supplemented by a fluoroscopic examination of the chest to determine the presence or absence of a substernal thyroid.

In this discussion the author deals chiefly with adenomata. He states that in a certain percentage of cases there is a definite association between colloid goiter i.e. simple goiter and the subsequent development of adenomata of the thyroid. There are no innocent adenomata sooner or later such tumors become toxic, and if they are not properly treated surgically, serious cardiovascular and nervous diseases result.

The importance of small adenomata of the thyroid as causes of serious cardiovascular disease is emphasized. These tumors are often so small that they escape the attention of the examiner while the cardiovascular symptoms are so overpowering that the treatment is directed toward a failing heart, the true cause being overlooked. In the treatment, operative interference is the method of choice. If the patient refuses operation or is an extremely poor risk, the X rays or radium should be used.

**ARTHUR L. SREFFLER, M.D.**

**Castex R. and Scheingart, M.** Cholesterinaemia and Calcæmia in Thyroid Conditions. Their Relation to the Basal Metabolism (La colesterinaemia y la calcemia en los estados tiroideos sus relaciones con el metabolismo basal) *Arch argent de enferm d apar digest* 19 5 1 2 1

The authors report their study of the relation between thyroid function and the metabolism of cholesterol and calcium as shown by the content of cholesterol and calcium in the blood in cases in which a diagnosis of hypothyroidism or hyperthyroidism was made on the basis of the basal metabolism.

The findings of these investigations demonstrate that the internal secretion of the thyroid does not influence the cholesterol content of the blood in the slightest. The authors therefore conclude that the hypcholesterinaemia and hypercholesterinaemia observed in patients with thyroid disturbances depend, not upon the thyroid condition but upon some other condition possibly the influence of the thyroid on the adrenals.

As the calcium content of the blood also was found to be uninfluenced by thyroid dysfunction, the authors conclude that the changes in the quantity of calcium in the blood in thyroid disease may depend upon some factor related to the vagosympathetic system. **JOHN W. BRENNAN, M.D.**

**Simpson W. M.** Three Cases of Thyroid Metastasis to Bones With a Discussion as to the Existence of the So called 'Benign Metastasizing Goiter' *Surg Gynec & Obst* 19 6 xlii 489

In a study of case reports Simpson concludes that the observation of supposed metastases of nor-

mal thyroid tissue made by Cohnheim and by Morris have been widely quoted and have influenced many others to report similar cases. Cohnheim's report of a case of simple colloid goiter with metastasis contains abundant evidence of primary carcinoma of the thyroid gland. In the case reported by Morris there was no histological or other examination of the thyroid gland.

In most of the collected cases the diagnosis of benign metastasizing goiter was based upon the clinically benign appearance of the goiter and the benign microscopic appearance of extirpated metastases.

Metastases of thyroid carcinomata vary greatly in their microscopic appearance and may assume the structure of normal thyroid tissue, benign thyroid adenomata or simple colloid goiter. Such secondary growths may function in the same manner as normal thyroid tissue.

A microscopic examination of the thyroid gland was made in only twenty nine of seventy seven similar cases collected from the literature and in many of the reports areas of undoubted carcinoma were described. Autopsy was done in only 33 per cent of the reported cases.

The belief of some surgeons that these distant metastases represent aberrant thyroid tissue has no basis in fact.

The metastases in cases of so called benign metastasizing goiters show the same striking predilection for bone that characterizes secondary growths of thyroid origin which show a frank carcinomatous structure. The vertebral bodies and the cranial bones are most frequently involved. Pathological fractures of the humerus and femur are common. The osseous metastases frequently show fluctuations in size during menstruation and pregnancy. Pulsation is a common finding.

Most of the thyroid metastases to bone were diagnosed clinically and roentgenographically as primary sarcomata. Metastatic new growth of thyroid, prostate, breast, adrenal or renal origin should be considered in cases of skeletal new growth.

The reports of most cases of benign metastasizing goiter were published soon after the discovery of the metastasis with a benign microscopic appearance and before the outcome of the condition was known.

Two cases from the University of Michigan hospital showed osseous metastases of microscopically benign tissue associated with clinically negative goiters. One was reported soon after operation as an instance of metastasis of normal fetal thyroid tissue. Both patients subsequently showed clinical evidence of undoubted carcinoma of the thyroid gland and died after eighteen months and two years respectively.

Many cases are recorded in which the microscopic examination of tissue from the metastasis revealed normal thyroid structure while histological study of tissue from the thyroid gland showed undoubted areas of carcinoma.

Abundant evidence indicates that there is no such entity as 'benign metastasizing goiter'. The use of the term should therefore be abandoned.

JAMES C. BRASWELL, M.D.

**Blum F.** Studies on the Parathyroid Glands. Their Secretion, Their Importance for the Organism and the Possibility of Substituting for Them (Studien ueber die Epithelkoerperchen, ihr Sekret ihre Bedeutung fuer den Organismus die Moeglichkeit ihres Ersatzes). 1925. Jena. Fischer.

This monograph is the report of a series of investigations made on several hundreds of animals during a period of more than ten years.

The parathyroid glands secrete a hormone internally which becomes activated into the complete hormone only outside the gland and then circulates in the blood plasma. The blood cells are free from hormones. During lactation the parathyroid hormone passes into the milk.

Through their hormone the parathyroid glands exert a definite influence on a large number of organs acting as a protective mechanism against a constantly threatening auto-intoxication. When their protective influence over the central nervous system is deficient tetany and occasionally hallucinations occur. In the bone and tooth structures parathyroid deficiency is evidenced by retardation of growth and malformations in the blood by a marked decrease in the calcium content of the serum and in the external eye by inflammatory and trophic degenerative disturbances. When the kidney is insufficiently protected there is an increase in the residual nitrogen. The parathyroid hormone protects also the hæmatopoietic apparatus, the thyroid gland and other organs.

All of the organs so protected are injured when the integrity of the parathyroid glands is destroyed but if the body continues to be supplied by the hormone from a remnant of the parathyroid glands or by protective feeding (milk or blood) repletion occurs in the endangered organs according to their power to attract the protective bodies, a power which depends upon their susceptibility to intoxication.

In mature animals reserve substitution products are mobilized in the body when the parathyroid hormone is decreased but in immature animals this does not occur. In the young therefore any decrease in the function of the parathyroid glands causes marked weakening. During nursing the mother provides the supply of hormone for the child from the protective substances in her milk.

These findings provide a new point of view with regard to the nature and treatment of certain diseases.

STRAHL (Z)

**Iglauer S.** The Treatment of Chronic Laryngo-tracheal Stenosis. *Ohio State W. J.* 1926. xii: 218.

Iglauer is of the opinion that stenosis of the larynx is usually secondary to ulcerative processes within the larynx. In adults paralysis of the recurrent laryngeal nerves and ankylosis of the arytenoid

cartilages are other causes. The nature and extent of the stenosed area can be determined by direct and x-ray examination.

As chronic cannula carriers are more comfortable if they wear a valvular speaking cannula, Iglaue has made a cannula that opens on inspiration and closes on expiration. Obstructive lesions should be removed and prolonged treatment with metal or rubber dilators should be given. The prognosis for ultimate functional recovery is favorable.

JAMES C. BRASWELL, M.D.

**Ferreri, G.** Cancer of the Larynx in Woman (Le cancer du larynx chez la femme). *Arch. internat. de laryngol.*, 1925, **xxxi**, 897.

Cancer of the larynx occurs about six times as often in men as in women. Formerly many brilliant results from operation were reported because an erroneous diagnosis of cancer was made in cases of syphilitic gummata, tuberculous vegetations, pachydermia of the larynx, and benign new growths. The difference in the incidence of cancer in the larynx in the two sexes disproves the theories of contagiousness and heredity of malignant tumors. There is nothing but hypothesis to explain it. As the majority of laryngeal cancers occur in syphilitics, the most probable theory is that syphilitic lesions in men are exposed to irritation by alcohol, smoke, misuse of the voice, dust, and irritating vapors more frequently than those in women.

The age incidence of laryngeal cancer is about the same in men and women. Forty-five per cent of the subjects are between 50 and 60 years of age and 23.4 per cent between 40 and 50 years, but the condition has been found as early as the twentieth year.

The diagnosis should always be made by examination of a piece excised from the tumor since roentgen

treatment seems to have no effect on spinocellular cancer but is effective on the basal cell form. Most of the cancers of the larynx observed in women are extrinsic rather than intrinsic.

In intrinsic cancer, laryngofissure is the method of choice, but if the epithelioma has passed beyond the vocal cord and affected the arytenoid cartilages or the crico-arytenoid articulation or has crossed the anterior commissure and invaded the other side, total extirpation of the larynx is indicated. The author disapproves of hemilaryngectomy because it is associated with the danger of local recurrence and leaves the tissues in a condition of permanent irritation due to the presence of a fistula.

In extrinsic cancer the treatment of choice is radium irradiation preceded by tracheotomy to prevent suffocation. The radium should be applied directly to the lesion by the natural route if possible or through an operative fistula (hyothyrotomy). The author cites Sargnon's case of retro crico-arytenoid spinocellular epithelioma in a woman of 72 years of age. Fifty milligrams of radium were applied in a rubber container for six hours and then, after tracheotomy, thyrotomy and section of the epiglottis were performed. The patient was alive two years after the operation.

He reports also three cases of his own. One of his patients died of an inoperable cancer of the larynx and one recovered after total laryngectomy. The third recovered after tracheotomy followed by radium treatment but has been treated too recently for the final results to be known.

Ferreri regards roentgen treatment as more dangerous than radium treatment because it breaks down the tissues. The absorption of toxins from disintegrated tissue is more harmful to women than to men.

AUDREY G. MORGAN, M.D.



# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS CRANIAL NERVES

Harris W. and Newcomb W. D. A Case of Pontine Glioma with Special Reference to the Paths of Gustatory Sensation *Proc Roy Soc Med Lond* 1926 XIX Sect Neurol 1

The patient whose case is reported was a 14 year old boy whom Harris considered from the point of view of intellectual ability an excellent subject for careful gustatory examinations. At the time of his admission to the hospital he presented a typical pontine syndrome with paralysis of the body and extremities on the right side and of the face on the left side. The clinical picture suggested that the lesion was very extensive there being complete right hemi-anesthesia hypoglossal paralysis right fifth nerve anesthesia but no paralysis of the motor branch of this nerve and partial fifth nerve hypaesthesia to light touch on the left side.

The patient died about two months after his admission to the hospital following a continuously downward course.

Pathologically examination made by Newcomb revealed a tumor growth extending in the left side from the pons to the red nucleus and down to the lower border of the olive with a slight extension across the midline.

The authors were interested especially in the disturbance of taste which was complete both in the front and back of the tongue on the right side but on the left side was apparent only on the front of the tongue.

In Harris' opinion this gustatory disturbance is explained by Nageotte's theory that the gustatory nucleus receive fibers from the fifth nerve and pars intermedia as well as the glossopharyngeal and by the hypothesis that the function of the fifth nerve in the phenomenon of taste is the maintenance of common sensation while the nerve of Wernberg functions in a more specific capacity the two together combining to produce the sensation of taste.

LEO M. DAVIDOFF, M.D.

Simme W. The Glandular Treatment of Pituitary Tumors and Hyperplasias *Atlantic M J* 1926 XIX 427

Grant F. C. The Results in X Ray Treatment of Early Pituitary Lesions *Atlantic M J* 1926 XIX 430

Frazier C. H. The Surgical Management of Pituitary Lesions *Atlantic M J* 1926 XIX 435

Trueme distinguishes between simple hyperplasias of the pituitary and true pituitary neoplasms which he believes can be done by studying the history of the case. For the former he advises whole gland

treatment given in combination with hypodermic injections of pituitrin other glandular extracts iodides, etc. depending upon the case.

Frazier advocates the use of the X rays and radium in cases of primary tumors of the pituitary gland in which surgical scellar decompression is not indicated immediately to save vision and also as postoperative treatment in cases treated surgically. He cites seven cases with improvement of headache the visual fields and the general health following such treatment.

Frazier describes his technique for the transphenoidal approach to the pituitary and advises operative interference in cases in which a pituitary adenoma has reached a size sufficient to affect vision. He outlines a very careful pre-operative and post-operative routine.

LEO M. DAVIDOFF, M.D.

## SPINAL CORD AND ITS COVERINGS

Bréchet. Idiopathic Incontinence of Urine and Laminectomy (Incontinence essentielle d'urine et laminectomie) *Bull et mém Soc nat de chir* 1925 LI 896

Bréchet has performed six laminectomies for idiopathic incontinence of urine and one for bilateral hollow foot. One of the patients with incontinence had also a hollow foot and a permanent flexion contracture of the great toe. In none of the cases was there a family history of congenital malformation or nervous disease. The patients were all of normal intelligence. The roentgen picture showed the lumbosacral region normal in only one case. In the others there was a median fissure of the fifth lumbar or first sacral vertebra and in two cases the laminae did not meet on the same level and were superimposed at the ends. In another case the laminae were not as long as normal and the vertebral canal was therefore slightly smaller than normal. These were cases of false spina bifida occulta.

The technique of laminectomy was simple the operation consisting in a median incision dissection of the lumbosacral muscles and resection of the spinous processes and laminae of the first sacral or fifth lumbar vertebra or both. This is much simpler than the laminectomy recommended by Delbet for adults which Bréchet does not think should be practiced on young children.

The child with a hollow foot and contracture of the great toe was completely cured. He has not urinated in bed once since the operation his foot is normal and the contracture of the toe has disappeared. The child with a double hollow foot was also greatly benefited. The others were benefited but none of them was cured completely.

A certain amount of caution is necessary in judging the indications for operation in these cases since

in some of them recovery occurs spontaneously as the subject grows older, and up to the age of 10 to 12 years the roentgen picture of spina bifida occulta is not absolutely reliable.

In the discussion on this report OMBREDANNE said that he did not regard the difference in the level of the laminae as of much significance but believed that chief importance was to be ascribed to the fact that as the posterior vertebral arches were shorter than normal they did not form the usual curve but approached each other by the shortest route and were connected with each other by a fibrous layer thus resulting in a flattening of the spinal canal in its anteroposterior diameter. He doubts the wisdom of operating for incontinence of urine but has operated for pain incontinence of faeces and club-foot with good results.

BRECHOT replied that Ombredanne was considering cases of more pronounced spina bifida occulta than his. Brechot found the spinous processes normal in his cases and the fibrous thickening he discovered was in the dural sac there was no fibrous membrane connecting the laminae. Brechot does not advocate routine operation for incontinence of urine but thinks that when the roentgen picture shows malformation of the neural arch or fissure laminectomy is justifiable.

ANDREW G. MORGAN, M.D.

### SYMPATHETIC NERVES

BONANI, G. Late Results of Perifemoral Sympathectomy in the Treatment of Varicose Ulcer (Risultati lontani della simpatectomia perifemorale nel trattamento dell'ulcera varicosa). *Chir. d. or. gari d. morimer* 1935, 12, 569.

Bonani reports seven cases of perianteral sympathectomy for varicose ulcer in all of which the lesion had persisted for from seven to twenty years and had resisted the usual treatments. The Wassermann reaction was negative. In every instance roentgenograms of the leg showed the bone lesions which have been described as characteristic of severe cases.

The operative technique was that recommended by Lenche. The artery was exposed in the middle third of the thigh beginning at the apex of Scarpa's triangle where the collaterals are few. The technique is difficult and in old patients with atheroma of the arteries and perianteritis great care is necessary. Considerable time is required to ligate the small collaterals. After the exposure of the artery it is not difficult to strip the adventitia for a distance of from 10 to 12 cm.

In all of the author's cases healing occurred by first intention. In no instance was there any secondary hemorrhage. The immediate results were very good. Complete cicatrization of the ulcers occurred in four cases and partial cicatrization in two. In one case the treatment had no effect.

Re-examination of the patients a year and a half after the operation showed that the complete cicatrization which occurred in four cases was perma-

nent in only one in the others the ulcers recurred after fifteen days, three months and five months respectively. The result was temporary also in both of the cases of partial cicatrization. Because of these findings and the relative difficulty and danger of the operation Bonani concludes that the indications for perifemoral sympathectomy for varicose ulcer are very limited.

ANDREW G. MORGAN, M.D.

COMAN, F. D. Observations on the Relation of the Sympathetic Nervous System to Skeletal Muscle Tonus. *Bull. Johns Hopk. Hosp. Balt.* 1926, xxxviii, 163.

In summarizing the literature on the relation of the sympathetic nervous system to skeletal muscle tonus Coman states that stimulation of the sympathetic fibers to skeletal muscle has yielded only equivocal and unconfirmed results. Most observers find that elimination of the sympathetic fibers with preservation of the cerebrospinal innervation of skeletal muscle has no effect on the muscle tonus and there is general agreement that definitive loss of tone follows interference with the cerebrospinal reflex arc.

In the cat and dog the somatic nerve supply of the foreleg in relation to the thoracolumbar sympathetic outflow offers a unique anatomical basis for the elimination of one type of innervation without disturbance of the other. The first ramus communicans albus leaves the cord with the first thoracic root and the last of the thoracolumbar outflow leaves the cord with the third or fourth lumbar root. The secretory and vasomotor fibers for the forelimb leave from the fourth to ninth spinal roots inclusive (rarely from the third) the maximal effect being produced by stimulation of the seventh. Stimulation or section of white rami higher than the fourth thoracic causes only secretory or smooth muscle changes in the head (particularly in the eye). Hence the ventral roots of the entire brachial plexus including the first or second thoracic may be sectioned without interfering with the sympathetic innervation to the forelimb whereas section of the third to the tenth thoracic roots eliminates the sympathetic innervation of the foreleg without disturbing the somatic innervation.

From experiments on thirty nine cats and seven dogs Coman draws the following conclusions:

1. Stimulation of the sympathetic innervation to the foreleg fails to cause any tonic reaction.
2. Complete removal of the sympathetic to the foreleg does not influence the normal development of tone either before or after decerebration.
3. Complete removal of the somatic motor supply to the foreleg is followed by total abolition of tone both before and after decerebration.

Since none of the conditions essential for proof of the sympathetic innervation of skeletal muscle could be observed the conclusion is drawn that there is no relation between the sympathetic nervous system and the development or maintenance of postural tone in the cross-striated muscle.

The author states that his experimental results seem in accord with Sherrington's concept of skeletal muscle tonus as simply a postural reflex under cerebrosplinal control. None of the findings indicates the necessity of a distinction of elements in tonus such as the contractile and plastic elements postulated by Langelaan and there is no support to the theory of a dual innervation by sympathetic and somatic nerve elements. WALTER C. BUREK, M.D.

**Bransburg** The Histopathological Changes in the Heart Muscle Following Sympathectomy (Die pathologisch histologischen Veränderungen des Herzmuskels nach Sympathektomie) *Russkaja klin* 1925 IV 221

The effect upon the heart of a sympathectomy which cuts off the entire innervating cardiac plexus has not been reported in the literature. The author attempted to solve the problem experimentally by experiments on twenty dogs and twelve rabbits. Unilateral or bilateral sympathectomy was done and the heart muscle examined at periods ranging from one to one hundred and twenty days. The following conclusions are drawn:

1. Unilateral and bilateral cervical sympathectomy in rabbits and vagosympathectomy in dogs produce the following changes in the first few days following the operation: dilatation of the blood vessels, hyperæmia, œdema, intramuscular round cell infiltration, and an initial stage of muscle striation followed by its disappearance. These changes indicate a disturbance of the circulation and muscle nutrition and parenchymatous degeneration.

2. For a longer time—up to the fourth post operative month—the degenerative changes in the cardiac muscle become more pronounced. The granulation, the absence of cross striations, and the longitudinal fibrillation indicate profound nutritional disturbances and degeneration of the muscle elements. At this stage hyperæmia and œdema are no longer present.

3. After unilateral sympathectomy in the rabbit and vagosympathectomy in the dog the degenerative muscle changes in the heart are localized according to the innervation. After operations on the left side the muscle changes occur in the neighborhood of the plexus nervinæ, whereas after operations on the right side they occur in the region of the first, second, and third plexuses, and after bilateral operations degenerative phenomena are observed everywhere.

4. Resection of the depressor nerve on the left side in rabbits and dogs causes insignificant changes in the wall of the aorta and in the muscle in the region of the first and second plexuses (areas supplied by the branch of the depressor nerve). No muscle changes are observed in other parts of the heart.

5. The results obtained from investigations following sympathectomy in animals indicate the trophic importance of the cardiac branch of the sympathetic, the necessity of interpreting the indications for sympathectomy in man with greater care, and the fact that resection of the depressor nerve has apparently the same therapeutic and operative effect as sympathectomy. IESSE (Z)

# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Ginsburg S Pain in Cancer of the Breast Its Clinical Significance with Special Reference to Bone Metastases *Am J W Sc* 1926 clxx 320

Pain is rare during the early stages of mammary cancer Its presence is usually an indication that the carcinoma has undergone secondary degeneration with reactive inflammatory changes Deep pain and radiating pain usually indicate extension of the disease Skeletal metastases cause pain of wide spread distribution

The incidence of skeletal invasion in sixty seven cases of breast cancer admitted to the Cancer Division of the Montefiore Hospital, New York City was 74.6 per cent

In the early stages of skeletal metastasis the pain may be mild and inconstant with a tendency toward remission and periodicity which particularly in the absence of recurrent breast symptoms, may be deceptive to those unfamiliar with this type of invasion

Recovery of function in cases of skeletal metastasis may be due to subsidence of the inflammatory reaction and is only temporary The diagnosis is made by frequent physical and roentgen ray examinations

The author believes that in advanced cases of cancer of the breast, radiotherapy is more effective than other methods of treatment and suggests as a prophylactic measure, postoperative radiation not only of the breast but also of the skeletal regions which are most frequently invaded

WILLIAM E SHACKLETON M D

Richards G E X Rays and Radium in the Management of Breast Carcinoma *Canadian M Ass J* 1916 xvi, 358

There is a great deal of evidence to support the theory that the X ray kills cancer cells directly The cells of the basal cell epithelioma or lympho sarcoma are usually easily influenced As the epithelial cell approaches the squamous type it becomes more resistant A squamous cell epithelioma requires several times the dosage required by a basal cell tumor In tumors with the cylindrical form of cell the margin of safety between the dose necessary to destroy the cancer and that which will destroy the normal tissue is reduced almost to the vanishing point

Recent experimental work indicates that some, if not most of the effects produced by the X rays are due not to the direct destructive action of the rays upon the cancer cells but to an indirect effect produced in the normal body cells It appears that this is somewhat analogous to an immunity effect

In experiments on mice erythema doses of rays were applied to one groin and cancer grafts then implanted in both the rayed and the unrayed groin A tumor resulted from five of six of the inoculations in the protected area but from only one of the six made in the irradiated area

Heavy destructive doses of the rays produce fibrosis of the lung and destroy normal cells or lower their resistance A minimum erythema stimulates normal tissue to resist the cancer cell

The X rays may be made to cover adequately a much larger area than the quantities of radium which are usually available to the average physician and should be used in the majority of cases for both efficiency and economy

In all prophylactic treatment the limit of voltage used upon the chest wall or the lung should be 140 kv and over the axilla and supraclavicular areas, 210 kv

In practically all cases in which radium is employed postoperatively the author uses the X rays also He finds that three quarters of a full dose of both radium and the X rays can be administered simultaneously

Radium is of value chiefly in the treatment of accessible nodules in which an intense effect is desired In the pre operative treatment of single or multiple small nodules it may be used with the X rays in the form of surface applications or packs or buried platinum needles of low potency and high filtration In postoperative cases small skin nodules may be treated by surface applications plaques, packs, or platinum needles on wax moulds Nodules in the axilla may be treated with needles or packs For supraclavicular nodules the use of packs in conjunction with the X rays is indicated

HOWARD A MCKNIGHT M D

## TRACHEA, LUNGS, AND PLEURA

Forestier J Roentgenological Exploration of the Bronchial Tubes with Iodized Oil (Lipiodol) *Radiology* 1916 vi 303

After having proved the harmlessness of lipiodol injected into the bronchial tubes of animals, the author in conjunction with Leroux, used it in clinical cases and succeeded in outlining the bronchial tree in roentgenograms to the smallest ramifications A part of the oil is expectorated soon after its injection but most of it is absorbed gradually and eliminated in the course of several weeks

Lipiodol may be introduced into the bronchi by transglottic injection with the aid of a long curved catheter by the subglottic method which requires puncture of the intercrithyroid membrane or through the bronchoscope or laryngoscope

Before its injection intratracheal anesthesia is induced with novocain solution. From 20 to 40 c cm of the oil warmed to body temperature, is then allowed to gravitate into the part of the lung under investigation, the patient being placed in such a position that the part to be studied is as low as possible. Rapid exposures made in different positions or stereoscopically immediately after the injection record the localization of the oil and any pathological changes present. No more than one or two lobes of the lung should be explored at one time. The indications for the method are the following:

1 Cases in which a deviation, stricture or other abnormality of the trachea is suspected.

2 Cases with a long history of pulmonary disturbance and chronic expectoration in which the diagnosis between phthisis and bronchiectasis is difficult.

3 Cases in which the presence of a cavity in communication with the bronchi is indicated by roentgen.

4 Cases of thoracic fistulae of unknown origin.

5 Cases in which clinical, laboratory and ordinary X-ray examinations do not lead to a certain diagnosis.

The method gives valuable information by outlining the trachea and bronchi showing obstructions from pressure due to intrathoracic tumors and localizing cavities in communication with the bronchial tubes, but its greatest value lies in the diagnosis of bronchiectasis. Whether this condition is of the cylindrical or acicular variety it is easily demonstrated.

After therapeutic pneumothorax exploration with lipiodol may show whether an adherent part contains lung or is merely membrane. It serves also to control the amount of lung collapse.

In more than 100 injections no severe accident has occurred. The method is contra-indicated however in the cases of febrile tuberculous patients and after hemoptysis its use should be delayed for several days. In cases of pulmonary gangrene and anaerobic infection subglottic injection of iodized oil is inadvisable.

Though the procedure has been employed mainly as a diagnostic aid it has been followed occasionally by marked improvement in the clinical course of cases of bronchiectasis and lung cavities. In some instances the profuse expectoration has been decreased for months.

WOLFF HARTUNG M.D.

Møller P F and Von Magnus R. Investigations of Bronchial Affections by Means of Iodine Preparations Jodumbrin and Lipiodol. *Acta med Scand* 1925 1311 174.

The authors have injected iodized oil into the bronchi in twenty three cases. Distinct roentgenograms were obtained but in not all of the cases were the bronchi filled. Lipiodol Lafay a thick yellowish oil with an iodine content of 0.54 gm. per cubic centimeter has no local irritating effect and is absorbed in such slight amounts that it produces only a very

mild iodism. In most cases the authors used Jodumbrin which is as pure and as well tolerated as lipiodol more fluid, easier to inject, and produces a better shadow.

In the cases of patients with a tendency to cough a teaspoonful of a 1/2 per cent solution of syrupus codeini fortior is given one half hour before the injection. Local anesthesia is induced by swabbing the pharynx and larynx three times at intervals of five minutes with a 20 per cent solution of cocaine containing a few drops of 1:1000 adrenalin and syringing the larynx and the upper tracheal mucous membrane with 1/2 c cm of this solution. For the oil injection a 5 c cm laryngeal syringe with a cannula attached is used. The cannula is 15 cm long and has a caliber of 2 mm.

The cannula guided by the laryngoscope is introduced through the rima glottidis and the oil heated to 37 degrees C is slowly injected along the anterior tracheal wall. The patient breathes deeply and quietly and insofar as possible the injection is made during inspiration. The quantity estimated as necessary to fill one lung is between 5 and 30 c cm. The injections usually require from three to five minutes.

The iodized oil flows readily in the bronchi probably because of the heat of the body. During and immediately after the injection the oil is guided to the part of the lung to be studied by placing the patient in the proper position. When the patient coughs or retches the oil tends to escape into the esophagus and stomach.

The lung bases are injected with the patient seated and leaning toward the side of the lung to be examined. For the middle and upper lobes the injection is made with the patient sitting on a couch the foot of which is elevated. Immediately after the injection he is placed on the affected side head downward. Rolling the patient forward and backward on the involved side helps to fill the bronchi.

Immediately after the injection a transitory tracheal rale is audible and coughing is apt to occur. The patient is urged to suppress coughing. A few deep breaths will usually overcome the irritation. The next injection may then be given. No dyspnea or other disturbance of importance has been noted.

The day after the injection expectoration is often considerably increased but in a few days the sputum usually falls below the previous quantity. The first trace of iodine appears in the urine after about 12 hours. The excretion reaches its maximum in twenty-four hours and then gradually falls and after six days disappears.

In the cases reported there were no unfavorable secondary reactions with the exception of a fever of 38 degrees C in one case and coryza and headache in another. If the cannula used for the injection is too short the oil is apt to enter the esophagus.

Injection of the oil by puncture of the cricothyroid membrane is associated with danger as it has been known to cause the formation of a hematoma on the posterior tracheal wall, perilaryngeal edema and detachment of the tracheal mucous membrane.

The use of a bronchoscope in one case was of no special value and caused discomfort.

The roentgenogram should be made as soon as possible after the injection of the oil. After from twenty to thirty minutes the picture of the bronchial tree becomes blurred as the result of ejection by coughing and absorption.

The method described is of value to obtain information with regard to anatomical variations in the bronchi, certain pathological changes in the bronchi and lungs which are not shown by ordinary roentgenograms, dilatation of the bronchi and alveoli, fistulae with possibly a bronchial connection, the location of the cavities, and the extent of the infiltrations.

The authors have seen beneficial effects from iodized oil in a case in which the results of routine iodine therapy over a long period of time were unsatisfactory. Iodine can be given in considerably larger doses in oil without risk of unfavorable secondary reactions.

Pleural injections of doses as small as from 1 to 2 c cm in cases of pleurisy caused long continued rises in the temperature.

WALTER C BURKET M D

Packard G B, Jr. Empyema in Children. *Colorado Med* 1926, xxi, 88.

With regard to the treatment of empyema in children, the only surgical measure indicated during pneumonia is the aspiration of fluid to relieve pressure on the heart and opposite lung. The anæsthesia of choice is local anæsthesia, but nitrous oxide oxygen anæsthesia induced by an expert is very satisfactory. Ether is to be avoided.

The closed method of treatment was used in twenty five cases, the time of drainage averaging twenty seven days, and the open method (rib resection) in five cases, the time averaging fifty four days. The closed method has many advantages when careful after care can be given. The after treatment consists in irrigation of the empyema cavity with Dakin's solution twice daily and regular aspirations of the accumulated secretions at intervals of two or three hours with repeated injections of Dakin's solution.

There was only one death. Of the complications, otitis media was the most common and acute nephritis the next most common. There was one case each of myositis, endocarditis, erysipelas, chicken pox, meningitis, and subphrenic abscess.

RALPH B BETTMAN M D

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

Koontz A R Muscle and Fascia Suture with Relation to Hernia Repair *Surg Gynec & Obst* 1926 xlii 22

In the dog the internal oblique muscle and Poupart's ligament unite firmly when they are brought into apposition by suture even when considerable tension is exerted on the sutures.

The formation of a raw surface by the resection of a small strip of the edge of the internal oblique tend to make the union firmer than usual.

When the fascia lata of the dog is sutured to the underlying muscle these structures unite firmly provided the intervening layer of the areolar tissue has been removed.

Microscopic sections show that this union of muscle to fascia is accomplished by the growing together of the connective tissue fibers of the plane sheet of fascia (Poupart's ligament or fascia lata) with the fibers of the epimysium, perimysium and endomysium.

MARCUS H. HOBART, M.D.

## GASTRO INTESTINAL TRACT

Haudek The Reliability of the Gastric Niche in the Diagnosis of Ulcer (*Zur Frage der Verlässlichkeit der Magennische fuer die Ulcusdiagnose*) *Fortschr a d Geb d Roentgenstrahlen* 1925 xxviii 56 651

In the recent literature the reliability of the gastric niche in the diagnosis of ulcer has been questioned. Haudek regards it as an entirely reliable sign of ulcer when it is associated with the complete characteristic syndrome. The diagnosis is certain however only when the ulcer is situated in the middle portion of the stomach.

Haudek discusses a few cases in which even though an ulcer is not found at operation, such a lesion may be present. Not uncommonly an ulcer is overlooked during operation. When the findings are apparently negative the gastroduodenal omentum should be split and the posterior wall of the stomach examined.

Mention is made of cases reported by Simon and Altschul in which an apparent niche was produced by processes outside the stomach such as adhesions exerting traction on the serous side of a healed ulcer. Haudek calls attention to the diagnostic mistake in these cases and interprets the picture as a typical contrast filling of the duodenojejunal flexure within the gastric shadow. The error is attributed to the fact that because of his weakness the patient was not examined in the standing position. If he had been examined in this position the gastric and intestinal shadows could have been separated by pressure. Haudek denies the presence of a niche also in Altschul's case in which a niche was simulated by a tumor in the tail of the pancreas with a focus of calcification.

Serious difficulties arise undoubtedly in the presence of a diverticulum of the duodenojejunal flexure. In this condition as in cases of true gastric diverticula simulating niches mistakes may be made by even experienced examiners.

With regard to reports by Reiche, Petren and Edlinger the author states that niches are not protrusions and that there is no premonitory symptom of perforation. Perforation is extraordinarily rare in niche formation because of the adhesions around the niche.

It is easy to avoid mistaking a niche for an atypically situated dome of the left colonic flexure and for a pseudo niche in the angle which is nothing more than a normal bulging of the lesser curvature between two powerful peristaltic constrictions.

The question as to whether a differentiation between ulcer and carcinoma is possible. Haudek answers affirmatively with regard to primary carcinoma situated in the descending portion of the stomach but admits that it may be uncertain when an ulcer shows malignant degeneration. He includes in his article a table of the roentgenological differences between the two lesions. It is admitted that in certain cases the differential diagnosis was not easy but to show that a correct diagnosis was made eventually. Haudek reports statistics demonstrating that a carcinoma was never found when a diagnosis of ulcer was made and an ulcer was never present when the diagnosis was carcinoma.

RODOLPHUS (Z)

Bufalini M. Rational Surgical Treatment of Gastric and Duodenal Ulcer (*Sul trattamento chirurgico razionale dell'ulcera gastrica e duodenale*) *Arch ital di chir* 1925 xiv 641

Bufalini reviews the results of the various methods of operation for ulcer from simple gastro-enterostomy to the most extensive resections and concludes that there is no method of treatment that furnishes an absolute guarantee against recurrence or the development of peptic ulcer.

When resection was first performed numerous statistics were published which showed a much lower percentage of peptic ulcers after this operation than after simple gastro-enterostomy but as the late results have become more evident the difference is not nearly so great.

In the attempt to prevent recurrence and peptic ulcer surgeons have passed from simple resection of the pylorus to resection of the antrum and then to subtotal and even total resections of the stomach with the idea of eliminating the hydrochloric acid which is supposed to be the cause of peptic ulcer.

But von Haberer found peptic ulcer in two persons in whom extensive resection had brought about complete absence of free hydrochloric acid

In view of this fact and the further facts that extensive resections have a mortality considerably higher than that of gastro enterostomy that they suppress not only the hydrochloric acid but also other necessary constituents of the gastric secretion and that they often cause serious digestive disturbances Bufalini regards the simpler and more conservative operation as preferable unless there are special indications for extensive resection

AUDREY G MORGAN M D

**Sole The Indications and Technique of Gastrectomy** (Indicaciones y técnica de la gastrectomía) *Arch argent de enferm d apar digest* 19 5 1 196

In describing his method of performing gastrectomy the author makes no claims to originality but states that he has perfected the pre operative and postoperative care of the patient and his operative technique to such a point that the mortality of the operation has been reduced close to that of a simple gastro enterostomy He therefore feels justified in suggesting a further widening of its field of indications

With regard to the pre operative care he discusses the lowering of hypertension, the use of tonics digalen, polyvalent vaccines physiological saline solution glucose and insulin lavage oral and dental care breathing exercises and blood transfusion

Following the administration of morphine and scopolamine local anesthesia is induced by the injection into the gastrohepatic omentum of 10 c cm of 1 per cent novocain

The operative technique is shown in ten illustrations Complications discussed include hepatic dysfunction acute gastric dilatation and partial occlusion of the orifice of anastomosis by spasm malposition and traction In the author's cases these complications are rare

The most important part of the report is the discussion of the indications for gastrectomy Gastrectomy is now considered the operation of choice for ulcer

Gastropylorctomy is indicated in all cases of ulcer of the lesser curvature both pyloric and juxta pyloric in which the process is limited the inflammatory infiltration is not too extensive the lesion is not too firmly adherent to the pancreas and the general condition is not unfavorable

Sole performs it also for ulcer at the point of gastro intestinal anastomosis (gastrojejunal ulcer) and in cases of duodenal ulcer In cases of diverticulum of the duodenum in which exclusion of the duodenum is desired, an antropylorctomy is preferable to simple exclusion It is of advantage also when in cases of supramesocolic or inframesocolic stenosis of the duodenum with dilatation difficulty is experienced in effecting a satisfactory duodenojejunosomy

Contra indications to gastropylorctomy in ulcer are

1 Hemorrhage In cases with hemorrhage, operation may be considered only when there is repeated bleeding or the pulse is not above 100 and the tension is good

2 Inflammatory conditions When inflammation is present it may be prudent to await regression of the process and a more favorable condition before operating

3 Perforation into the free peritoneal cavity eight hours previously In cases of perforation into a closed cavity with perigastritis it is well to wait at least sixty days before doing a gastrectomy

With regard to the treatment of cancer the author urges a radical procedure and favors an exploratory laparotomy in order to get the patient operated upon early enough for radical resection

JOHN W BRENNAN M D

**Eastmond C Gastro Intestinal Infection Its Roentgen Manifestations** *Brit J Radiol* 1926 XXXI 93

Roentgenograms of the stomach frequently show usually on the lesser curvature, immediately behind the pylorus more or less localized filling defects which are manifestations of localized infections These defects are seldom over  $1\frac{1}{2}$  in extent The infections are characterized by congestion, round cell infiltration, and fibrosis The affected part shows minute points of barium retention or local areas of exaggerated barium density or presents a rigid tubular aspect with a change in the peristaltic waves

Non ulcerative deformities of the duodenum are usually considered to be the result of adhesions secondary to pericholecystitis but the author believes that infection of the duodenum is commonly coincidental with infection of the gall bladder and that the changes noted in the roentgen examination are due to changes in the duodenal wall itself Adhesions may be the result of a periduodenitis as well as a pericholecystitis The roentgen findings are in constant irregularities of form due to the chronic round cell infiltration and fibrosis When the infection involves the second portion of the duodenum the rugal markings may be obliterated constrictions may occur or the emptying rate may be changed

Infection in the terminal ileum may produce rigidity and a change in the motility of the part which is demonstrable roentgenographically The rugae may be flattened and there may be a variable irregularity of form and contracture of the lumen The pathological basis is the same as that in the stomach and duodenum Incompetency of the ileocecal valve is a frequent finding because the sclerotic condition prevents proper accommodation of the parts for closure of the valve

In the colon infiltration and fibrosis incident to chronic infection lead to loss of elasticity and rigidity of contraction The sigmoid is involved most frequently The author believes that in certain cases the formation of diverticula is an extension of the infectious process



variety which is more acute is destructive and ulcerative. The X-ray examination reveals gastric hypomotility and intestinal hypermotility. The principal sign of ileocaecal or caecocolic tuberculosis is the progressively increasing intolerance of the caecum to any content. In the authors' cases with ulceration this was demonstrated by fluoroscopic observation and palpation. The only other case in which it was noted was a case of retroperitoneal sarcoma which had raised and displaced the caecum.

The authors report five cases in which the diagnosis of caecal involvement was made from the X-ray findings. In these cases the caecum was removed. When the diagnosis can be made from the clinical symptoms the condition is usually beyond operative relief. The evidence of gross pathological changes in the bowel before its resection was slight. In two cases only the appendix showed gross evidence of disease but in two others there were no significant changes in the appendix. The authors reject the theory that the appendix is the first intestinal localization of the disease.

In cases of tuberculoma or the hyperplastic type of intestinal tuberculosis surgical removal is often indicated to rule out malignancy or relieve obstruction. The results of resection of the caecum in these cases are usually very satisfactory as not infrequently the patient is free from tuberculosis elsewhere. In the operation great care must be taken to prevent infection.

The article is supplemented by a number of roentgenograms. WILLIAM J. PICKETT M.D.

**Ockin A. Acute Appendicitis. A Study Based on the Material of the Municipal Military Hospital of Moscow.** (Die akute Appendicitis auf Grund des Materials des staedtischen Soldatenklovenkrankenhauses in Moskau.) *Verhandl. d. 16. russ. Chirurgenkongr. Moskau 1924.*

Of 4193 cases of appendicitis treated in the Municipal Hospital of Moscow 935 were acute. Six hundred and seven were operated upon; the ratio of those operated upon to those not operated upon being therefore 1:1.8. The critical period for the development of peritonitis is the first eight days. Later the tendency is toward abscess formation. Of the 328 cases treated surgically forty-two were operated upon on the first day, forty-four on the second day, twenty-seven on the third day, twenty-one on the fourth day, twenty on the fifth day, ten on the sixth day, twelve on the seventh day, six on the eighth day, eleven on the ninth day, six on the tenth day, fifty-six between the eleventh and eighteenth days, and seventy-three between the nineteenth and twenty-fourth days.

A diagnostic error was made in three cases (0.9 per cent). In 106 cases the appendix was removed; in 117 only a laparotomy or extraperitoneal section was done, and in fifteen a combined operation was performed.

The author usually operates within the first twenty-four hours. When early infiltration has

occurred without menacing symptoms he waits until the second day. At later stages he operates only on the most urgent indications.

Of the seventy-six deaths in the cases reviewed sixty-eight were due to diffuse peritonitis, four to localized peritonitis with abscess, one to necrosis, and three to severe complicating diseases. The total mortality in the cases of acute appendicitis was 8.1 per cent. In the cases operated upon it was 2.2 per cent. In the forty-two cases in which operation was performed on the first day there was one death, a mortality of 2.4 per cent. The cause of this death was peritoneal sepsis. In the forty-four cases operated upon on the second day there were eight deaths from diffuse purulent peritonitis, a mortality of 18.2 per cent. With operation on succeeding days the mortality rose to 33.3 per cent on the third day. In cases of diffuse peritonitis the mortality was 100 per cent.

Operation within the first twenty-four hours is urgently indicated, but in Russia this is not always possible on account of general conditions.

SCHIAACK (Z.)

**Hertzler A. E. An Inquiry Into the Nature of Chronic Appendicitis.** *Am. J. Obst. & Gynec. 1926* xi 155.

**Royston G. D. and Fisher A. O. Appendicitis in Pregnancy.** *Am. J. Obst. & Gynec. 1926* xi 184.

From an investigation to determine the nature of chronic appendicitis HERTZLER draws the following conclusions:

1. Fibrotic changes in the appendix of whatever degree are not attended by clinical symptoms.

2. The anatomical structure of the appendix which is commonly removed on the diagnosis of chronic appendicitis shows no variation from that of the appendix of a person without any abdominal complaint whatsoever.

3. Considered in the light of like changes in other organs the minimal changes alleged to be present in cases of so-called chronic appendicitis are wholly inadequate to explain the symptoms ascribed to them.

4. Mere alleged relief of symptoms after the removal of the appendix is not sufficient to prove that the appendix was the cause of the symptoms.

5. The vast majority of patients subjected to appendectomy for chronic appendicitis do not claim relief of their symptoms.

6. The symptoms alleged to be due to chronic appendicitis can be relieved by searching out and removing the actual cause without molesting the appendix.

ROYSTON and FISHER state that acute appendicitis in pregnancy progresses very rapidly and perforation is almost always followed by diffuse spread of peritonitis with little tendency toward localization and abscess formation.

In most instances the diagnosis is not difficult but in some cases the symptoms may be masked by the discomforts of a stormy pregnancy. In the presence

of acute abdominal symptoms suggesting appendicitis, the complication of pregnancy should be disregarded. Early interference in such cases is even more urgent, if possible, than in the ordinary case.

The authors are of the opinion that appendectomy should be recommended for women who had attacks of appendicitis before they became pregnant. Even though they successfully passed through one or more attacks, the risk of a recurrence during pregnancy is too great to be disregarded. The results of operation in the early months of pregnancy are apparently as good as those obtained in the non pregnant state and the danger of abortion is very slight. Ten cases are reported.

In the discussion of these reports HEYD said that much of the pathology of chronic appendicitis must be accepted on faith. He believes that the infected appendix should be regarded, not as a single isolated organ with symptoms of its own, but as an irritated viscus which interferes with the harmonious action of the entire gastro intestinal tract.

A number of years ago, when Heyd had occasion to tabulate the so called "cures" of chronic appendicitis by appendectomy he was greatly surprised to find that a cure was not obtained when the appendix was removed for simple localized pain on the right side, whereas in the cases in which the appendectomy was done for symptoms referable to the upper abdomen and there were no demonstrable pathological changes in either the gall bladder or the stomach a cure resulted almost invariably.

PHANEUF stated that in the late cases he found a gangrenous ruptured appendix and frequently he found general peritonitis due to lack of localization. A measure which may save life is enterostomy or caecostomy done in connection with the appendectomy. In this procedure a pursestring suture of catgut is placed around the base of the appendix, the appendix is removed flush with the caecum, a No. 28 French catheter is introduced into the opening and fastened to the edges of the wound with a stitch of catgut and the pursestring is tied. A second pursestring suture is usually employed to make the catheter more secure in the intestine. The catheter is brought out through a stab wound and the abdomen is drained by means of a cigarette drain through the primary incision.

This procedure makes it possible to control distention, establish drainage and introduce glucose solution directly into the intestine.

E. L. CORNELL M. D.

Neumann, W. Chronic Appendicitis According to the Statistics of the Municipal Military Hospital of Moscow (Die chronische Appendicitis nach Angaben des städtischen Soldatenkovkrankenhauses in Moskau). *Verhandl. d. 16 russ. Chirurgenkongr.*, Moscow 1904.

In the last thirteen years 3,258 cases of chronic appendicitis have been treated on the surgical division of the Municipal Military Hospital of Moscow. One thousand and sixty two of the patients were

males. Forty seven per cent of the patients were in the third decade of life.

Three thousand and eighty two of the cases were operated upon. In twenty one cases removal of the appendix was impossible because of deep infiltration. Local anaesthesia was employed in 39 per cent.

Postoperative pneumonia occurred in ninety cases (3 per cent), and suppuration in 319 cases (10 per cent). There were twenty two deaths, a mortality of 0.7 per cent. The cause of death was narcosis in four, peritonitis in fourteen, sepsis in two, haemiplegia in one, and labor in one.

The author believes that appendectomy is indicated after one attack of appendicitis.

SCHAAK (Z)

Eliason, E. L. Pylephlebitis and Liver Abscess Following Appendicitis. *Surg. Gynec. & Obst.* 1906, vol. 110.

Pylephlebitis and abscess of the liver have come to be regarded by many surgeons as the same condition. Liver abscess may arise through four channels: the portal veins, the hepatic artery, the bile ducts, and possibly, although in no case has this been demonstrated, through the lymphatics.

When the hepatic artery is the portal of entry, the abscesses are small and multiple and death results from the original blood stream infection. When the bile ducts carry the infection, the abscesses are distributed accordingly and pus is found in the ducts. In diffuse peritonitis the lymphatics are probably the carriers. It is only when the infection travels by way of the portal veins that both pylephlebitis and hepatic abscesses occur, even then the two conditions are not always associated, as is shown by one of the cases reported in this article.

Eliason has collected in all fifty three cases of pylephlebitis with twenty seven deaths, a mortality of 50.9 per cent. In some of these cases the diagnosis was not confirmed by operation or autopsy.

The signs and symptoms include fever, leucocytosis, pain, icterus, tenderness, oedema, nausea and vomiting, ascites, lassitude, anorexia and emaciation. The last three were marked in every case. In cases presenting the symptoms mentioned and in the region of the lower ribs in the mid axillary line a firm or boggy oedema with the characteristics of a lymph rather than a vascular oedema, Eliason believes an exploration is warranted. The X ray findings are important.

The author reports twelve cases of liver abscess and two of pylephlebitis. In seven of twelve cases of liver abscess only a single abscess was found. The oldest patient was 67 years of age. The youngest with abscess was 13 years old, and the youngest with pylephlebitis 7 years old. Seven of the fourteen patients survived. In the sixty seven cases reported to date—fifty three in the literature and fourteen reported in this article—the mortality was 54.5 per cent.

If a careful study of the reported cases is made two startling facts are brought to light: the first,

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

Koontz A R Muscle and Fascia Suture with Relation to Hernia Repair *Surg Gynec & Obst* 1926 xlii 222

In the dog the internal oblique muscle and Poupart's ligament unite firmly when they are brought into apposition by suture even when considerable tension is exerted on the sutures.

The formation of a raw surface by the resection of a small strip of the edge of the internal oblique tendon to make the union firmer than usual.

When the fascia lata of the dog is sutured to the underlying muscle these structures unite firmly provided the intervening layer of the areolar tissue has been removed.

Microscopic sections show that this union of muscle to fascia is accomplished by the growing together of the connective tissue fibers of the plane sheet of fascia (Poupart's ligament or fascia lata) with the fibers of the epimysium, perimysium and endomysium.

MARCUS H. HOBART M.D.

## GASTRO INTESTINAL TRACT

Haudek The Reliability of the Gastric Niche in the Diagnosis of Ulcer (Zur Frage der Verlaesslichkeit der Magennische fuer die Ulcusdiagnose) *Fortchr a d Geb a Koentg nstrahlen* 192 xxvii 56 61

In the recent literature the reliability of the gastric niche in the diagnosis of ulcer has been questioned. Haudek regards it as an entirely reliable sign of ulcer when it is associated with the complete characteristic syndrome. The diagnosis is certain however only when the ulcer is situated in the middle portion of the stomach.

Haudek discusses a few cases in which even though an ulcer is not found at operation, such a lesion may be present. Not uncommonly an ulcer is overlooked during operation. When the findings are apparently negative the gastrocolic omentum should be split and the posterior wall of the stomach examined.

Mention is made of cases reported by Simon and Altschul in which an apparent niche was produced by processes outside the stomach, such as adhesions exerting traction on the serous side of a healed ulcer. Haudek calls attention to the diagnostic mistake in these cases and interprets the picture as a typical contrast filling of the duodenojejunal flexure within the gastric shadow. The error is attributed to the fact that because of its weakness the patient was not examined in the standing position. If he had been examined in this position the gastric and intestinal shadows could have been separated by pressure. Haudek denies the presence of a niche also in Alt-

schul's case in which a niche was simulated by a tumor in the tail of the pancreas with a focus of calcification.

Serious difficulties arise undoubtedly in the presence of a diverticulum of the duodenojejunal flexure. In this condition as in cases of true gastric diverticula simulating niches mistakes may be made by even experienced examiners.

With regard to reports by Reiche, Petren and Edlinger the author states that niches are not protrusions and that there is no premonitory symptom of perforation. Perforation is extraordinarily rare in niche formation because of the adhesions around the niche.

It is easy to avoid mistaking a niche for an atypically situated dome of the left colonic flexure and for a pseudo niche in the angle which is nothing more than a normal bulging of the lesser curvature between two powerful peristaltic constrictions.

The question as to whether a differentiation between ulcer and carcinoma is possible, Haudek answers affirmatively with regard to primary carcinoma situated in the descending portion of the stomach but admits that it may be uncertain when an ulcer shows malignant degeneration. He includes in his article a table of the roentgenological differences between the two lesions. It is admitted that in certain cases the differential diagnosis was not easy, but to show that a correct diagnosis was made eventually. Haudek reports statistics demonstrating that a carcinoma was never found when a diagnosis of ulcer was made and an ulcer was never present when the diagnosis was carcinoma.

ROEDIGER (7)

Bufalini M Rational Surgical Treatment of Gastric and Duodenal Ulcer (Sul trattamento chirurgico razionale dell'ulcera gastrica e duodenale) *Arch ital di chir* 1925 xiv 641

Bufalini reviews the results of the various methods of operation for ulcer from simple gastroenterostomy to the most extensive resections and concludes that there is no method of treatment that furnishes an absolute guarantee against recurrence or the development of peptic ulcer.

When resection was first performed numerous statistics were published which showed a much lower percentage of peptic ulcers after this operation than after simple gastroenterostomy, but as the late results have become more evident the difference is not nearly so great.

In the attempt to prevent recurrence and peptic ulcer surgeons have passed from simple resection of the pylorus to resection of the antrum and then to subtotal and even total resections of the stomach with the idea of eliminating the hydrochloric acid which is supposed to be the cause of peptic ulcer.

The diagnosis is usually made from the hæmorrhage or the later evidence of perforation. The condition may be mistaken for perforated appendicitis. Operative intervention offers the only hope of cure. The diverticulum should be removed. If the patient's condition will not allow this, eversion of the loop and drainage of the peritoneum must suffice.

The authors report two cases of their own and review thirteen cases reported in the literature.

WILLIAM J. PICKETT, M.D.

**Pascale G. Peptic Ulcer of Meckel's Diverticulum**  
(Úlcera péptica del divertículo de Meckel) *Ann Ital di chir.* 1925 14, 965

Only eight cases of ulcer of Meckel's diverticulum have been reported in the literature. In four the lesion was found at autopsy, and in the others, during emergency operations performed on various diagnoses.

The author reports a case of his own in which the diagnosis was made before operation. The patient was a 41 year old woman who, since 1912, had been having crises of pain in the para umbilical region without any true gastric pain or hæmatemesis, had passed blood mixed with pus per rectum, and had periods of obstinate constipation lasting for seven or eight days.

Appendicitis was excluded by the fact that there was no fever and the para umbilical pain did not radiate into the iliac fossa. The pain in ulcer of Meckel's diverticulum is independent of meals and of the kind of food eaten. It may be accompanied by gastric symptoms but not by vomiting or hæmatemesis. The hæmorrhage from the intestine is more serious the nearer the ulceration to the insertion of the mesentery. The longer the diverticulum and the nearer the ulcer to its tip the less the hæmorrhage.

In the case reported, the roentgen examination showed the stomach, duodenum and ileocecal region to be normal. At the site of the pain to the right of the umbilical region, was a loop of small intestine containing a dark, well defined shadow which suggested a calculus. A diagnosis of simple ulcer of the small intestine was made.

Operation revealed a Meckel's diverticulum with a calculus and the scar of a healed ulcer. As the appendix was entirely normal, it was not removed. The diverticulum was excised, the opening in the wall of the intestine sutured in three layers and the abdominal wound completely closed. Recovery was uneventful, and the patient has had no further symptoms.

Peptic ulcers of Meckel's diverticulum are identical with round ulcer of the stomach in their anatomical form, the condition of the tissues around them, and their course and outcome. In all of the cases in which a histological examination has been made, gastric mucosa has been found in the diverticulum. These islands of primitive embryonic gastric mucosa in abnormal surroundings develop abnormally because of lack of function, and the biological condition of the mucosa is affected by a change in the secretion

of the peptic glands which favors ulceration as the result of other vascular, nervous, and infective factors.

The only treatment is radical removal of the diverticulum.

AUDREY G. MORGAN, M.D.

**Castex M. R. Romano N. and Beretervide, J. J.**  
**Insufficiency of the Ileocecal Valve** (La insuficiencia de la válvula ileo cecal) *Arch. argent. de enferm. d. apar. digest.* 1925, 1, 124

Experiments on animals and observations on man through a cecal fistula have shown that the ileocecal valve is a true sphincter which retains fecal matter in the small intestine until digestion is complete and prevents regurgitation from the large intestine. Insufficiency of the valve may result from mobility of the cæcum, atrophy of the tissues an inflammatory process a congenital defect, or a tumor in the ileocecal region, but its most common cause is dilatation of the cæcum caused by simple stagnation of fecal matter, an excessive accumulation of gas, dyspepsia from putrefaction and fermentation, chronic colitis followed by atony of the wall, or parasitic colitis.

The symptoms are chiefly the general symptoms of intoxication but there is tenderness on pressure over the valve. The valve is situated at the intersection of a line connecting the highest point of the crests of the ilium with a line perpendicular to the middle point of Poupart's ligament. In some cases the distended cæcum can be seen in the right iliac fossa and pressure exerted with one hand on the ascending colon and the other on the cæcum so as to force the valve will make the swelling disappear. In roentgen examinations of 3,000 patients Case found insufficiency of the ileocecal valve in one sixth.

The clinical histories of twelve cases are reported with the roentgenograms. Except in extreme cases, the treatment is medical. The intestine should be evacuated three or four times a day. The best method of supplying sugar to the large intestine to favor the growth of flora that will protect against putrefaction is the administration of from 60 to 100 gm. of lactose daily. Cases in which intestinal parasites are present should be treated with yatren, stovarsol, treparsol or emetine.

In sixty cases which Kellogg treated medically a cure was obtained in 36 per cent, improvement in 40 per cent, and slight benefit in 14 per cent. His radical surgical treatment consists in exteriorizing the ileocecal region making a U shaped suture to overcome the invagination of the small intestine and restoring the continuity of the ruptured habenuola of the cæcum.

AUDREY G. MORGAN, M.D.

**Larimore J. W., and Fisher, A. O.**  
**Tuberculosis of the Cæcum** *Ann. Surg.* 1926, LXXXII 496

Tuberculosis of the intestine is of three types—the hyperplastic the fibrous and the ulcerative. Primary intestinal tuberculosis tends to remain localized and to be hyperplastic, while the secondary

variety which is more acute is destructive and ulcerative. The X ray examination reveals gastric hypomotricity and intestinal hypermotility. The principal sign of ileocaecal or caecocolic tuberculosis is the progressively increasing intolerance of the caecum to its content. In the authors' cases with ulceration this was demonstrated by fluoroscopic observation and palpation. The only other case in which it was noted was a case of retroperitoneal sarcoma which had raised and displaced the caecum.

The authors report five cases in which the diagnosis of caecal involvement was made from the X ray findings. In these cases the caecum was removed. When the diagnosis can be made from the clinical symptoms the condition is usually beyond operative relief. The evidence of gross pathological changes in the bowel before its resection was slight. In two cases only the appendix showed gross evidence of disease but in two others there were no significant changes in the appendix. The authors reject the theory that the appendix is the first intestinal localization of the disease.

In cases of tuberculoma or the hyperplastic type of intestinal tuberculosis surgical removal is often indicated to rule out malignancy or relieve obstruction. The results of resection of the caecum in these cases are usually very satisfactory as not infrequently the patient is free from tuberculosis elsewhere. In the operation great care must be taken to prevent infection.

The article is supplemented by a number of roentgenograms. WILLIAM J. PICKETT, M.D.

**Ockin, A.** Acute Appendicitis. A Study Based on the Material of the Municipal Military Hospital of Moscow. (Die akute Appendicitis auf Grund des Materials des städtischen Soldatenkrankenhaus in Moskau.) *Verhandl. d. 16 russ. Chirurgenkongr. Moskau* 1924.

Of 4193 cases of appendicitis treated in the Municipal Hospital of Moscow 935 were acute. Six hundred and seven were operated upon; the ratio of those operated upon to those not operated upon being therefore 1:1.8. The critical period for the development of peritonitis is the first eight days. Later the tendency is toward abscess formation. Of the 328 cases treated surgically forty-two were operated upon on the first day, forty-four on the second day, twenty-seven on the third day, twenty-one on the fourth day, twenty on the fifth day, ten on the sixth day, twelve on the seventh day, six on the eighth day, eleven on the ninth day, six on the tenth day, fifty-six between the eleventh and eighteenth days, and seventy-three between the nineteenth and twenty-fourth days.

A diagnostic error was made in three cases (0.9 per cent). In 196 cases the appendix was removed; in 117 only a laparotomy or extraperitoneal section was done, and in fifteen a combined operation was performed.

The author usually operates within the first twenty-four hours. When early infiltration has

occurred without menacing symptoms he waits until the second day. At later stages he operates only on the most urgent indications.

Of the seventy-six deaths in the cases reviewed sixty-eight were due to diffuse peritonitis, four to localized peritonitis with abscess, one to narcosis and three to severe complicating diseases. The total mortality in the cases of acute appendicitis was 8.1 per cent. In the cases operated upon it was 2.2 per cent. In the forty-two cases in which operation was performed on the first day there was one death, a mortality of 2.4 per cent. The cause of this death was peritoneal sepsis. In the forty-four cases operated upon on the second day there were eight deaths from diffuse purulent peritonitis, a mortality of 18.2 per cent. With operation on succeeding days the mortality rose to 33.3 per cent on the third day. In cases of diffuse peritonitis the mortality was 100 per cent.

Operation within the first twenty-four hours is urgently indicated but in Russia this is not always possible on account of general conditions.

SCHLACK (Z.)

**Hertzler, A. E.** An Inquiry into the Nature of Chronic Appendicitis. *Am. J. Obst. & Gynec.* 1926, **21**, 155.

**Royston, G. D. and Fisher, A. O.** Appendicitis in Pregnancy. *Am. J. Obst. & Gynec.* 1926, **21**, 184.

From an investigation to determine the nature of chronic appendicitis HERTZLER draws the following conclusions:

1. Fibrotic changes in the appendix of whatever degree are not attended by clinical symptoms.

The anatomical structure of the appendix which is commonly removed on the diagnosis of chronic appendicitis shows no variation from that of the appendix of a person without any abdominal complaint whatsoever.

3. Considered in the light of like changes in other organs the minimal changes alleged to be present in cases of so-called chronic appendicitis are wholly inadequate to explain the symptom ascribed to them.

4. Mere alleged relief of symptoms after the removal of the appendix is not sufficient to prove that the appendix was the cause of the symptoms.

5. The vast majority of patients subjected to appendectomy for chronic appendicitis do not claim relief of their symptoms.

6. The symptoms alleged to be due to chronic appendicitis can be relieved by searching out and removing the actual cause without molesting the appendix.

ROYSTON and FISHER state that acute appendicitis in pregnancy progresses very rapidly and perforation is almost always followed by diffuse spreading peritonitis with little tendency toward localization and abscess formation.

In most instances the diagnosis is not difficult but in some cases the symptoms may be masked by the discomforts of a stormy pregnancy. In the presence

of acute abdominal symptoms suggesting appendicitis, the complication of pregnancy should be disregarded. Early interference in such cases is even more urgent, if possible, than in the ordinary case.

The authors are of the opinion that appendectomy should be recommended for women who had attacks of appendicitis before they became pregnant. Even though they successfully passed through one or more attacks, the risk of a recurrence during pregnancy is too great to be disregarded. The results of operation in the early months of pregnancy are apparently as good as those obtained in the non pregnant state and the danger of abortion is very slight. Ten cases are reported.

In the discussion of these reports HEYD said that much of the pathology of chronic appendicitis must be accepted on faith. He believes that the infected appendix should be regarded, not as a single isolated organ with symptoms of its own, but as an irritated viscus which interferes with the harmonious action of the entire gastro intestinal tract.

A number of years ago when Heyd had occasion to tabulate the so called "cures" of chronic appendicitis by appendectomy he was greatly surprised to find that a cure was not obtained when the appendix was removed for simple localized pain on the right side, whereas in the cases in which the appendectomy was done for symptoms referable to the upper abdomen and there were no demonstrable pathological changes in either the gall bladder or the stomach a cure resulted almost invariably.

PHAVEUR stated that in the late cases he found a gangrenous ruptured appendix and frequently he ginning general peritonitis due to lack of localization. A measure which may save life is enterostomy or caecostomy done in connection with the appendectomy. In this procedure a pursestring suture of catgut is placed around the base of the appendix, the appendix is removed flush with the caecum, a No. 28 French catheter is introduced into the opening and fastened to the edges of the wound with a stitch of catgut and the pursestring is tied. A second pursestring suture is usually employed to make the catheter more secure in the intestine. The catheter is brought out through a stab wound and the abdomen is drained by means of a cigarette drain through the primary incision.

This procedure makes it possible to control distention, establish drainage, and introduce glucose solution directly into the intestine.

E. L. CORVELL, M.D.

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males. Forty seven per cent of the patients were in the third decade of life.

Three thousand and eighty two of the cases were operated upon. In twenty one cases removal of the appendix was impossible because of deep infiltration. Local anesthesia was employed in 39 per cent.

Postoperative pneumonia occurred in ninety cases (3 per cent), and suppuration in 319 cases (10 per cent). There were twenty two deaths, a mortality of 0.7 per cent. The cause of death was narcosis in four, peritonitis in fourteen, sepsis in two, hemorrhilia in one, and labor in one.

The author believes that appendectomy is indicated after one attack of appendicitis.

SCHWABER (L)

Eliaison, F. L. Pylephlebitis and Liver Abscess Following Appendicitis. *Surg., Gynec. & Obst.*, 1926, vol. 510.

Pylephlebitis and abscess of the liver have come to be regarded by many surgeons as the same condition. Liver abscess may arise through four channels: the portal veins, the hepatic artery, the bile ducts, and possibly, although in no case has this been demonstrated, through the lymphatics.

When the hepatic artery is the portal of entry, the abscesses are small and multiple and death results from the original blood stream infection. When the bile ducts carry the infection, the abscesses are distributed accordingly and pus is found in the ducts. In diffuse peritonitis the lymphatics are probably the carriers. It is only when the infection travels by way of the portal veins that both pylephlebitis and hepatic abscesses occur, even then, the two conditions are not always associated, as is shown by one of the cases reported in this article.

Eliaison has collected in all fifty three cases of pylephlebitis with twenty seven deaths, a mortality of 59 per cent. In some of these cases the diagnosis was not confirmed by operation or autopsy.

The signs and symptoms include fever, leucocytosis, pain, icterus, tenderness, oedema, nausea and vomiting, ascites, lassitude, anorexia and emaciation. The last three were marked in every case. In cases presenting the symptoms mentioned and, in the region of the lower ribs in the mid axillary line a firm or boggy oedema with the characteristics of a lymph rather than a vascular oedema, Eliaison believes an exploration is warranted. The X ray findings are important.

The author reports twelve cases of liver abscess and two of pylephlebitis. In seven of twelve cases of liver abscess only a single abscess was found. The oldest patient was 67 years of age. The youngest with abscess was 13 years old, and the youngest with pylephlebitis, 7 years old. Seven of the fourteen patients survived. In the sixty-seven cases reported to date—fifty three in the literature and fourteen reported in this article—the mortality was 54.5 per cent.

If a careful study of the reported cases is made, two startling facts are brought to light: the first,

that in every case a provisional diagnosis or a retained diagnosis of right basal pneumonia was made and the second that a positive operative diagnosis was made very tardily. The treatment was surgical.

The author draws the following conclusions:

1 Pylephlebitis and liver abscess are not identical. They occur as a complication in from 0.1 to 0.4 per cent of cases of appendicitis.

2 The X-ray and fluoroscope aid in the early diagnosis by showing a high diaphragm, the movement of which is sometimes restricted.

3 Local edema and prominent veins are valuable diagnostic signs.

4 Pain is not always present. It is noted most when the infection is in or on the upper surface of the liver.

5 Pneumonic signs are frequently the result of lung compression rather than pneumonia.

6 Jaundice is practically a constant sign.

7 The presence of lassitude and anorexia is very suggestive in the diagnosis.

8 The prognosis is not always poor since recovery results in 54 per cent of the cases.

9 Operation through the diaphragm is the treatment of choice. CARL R. STEINKE, M.D.

**Cantelmo O.** An Experimental Study of the Histopathology of Ileosigmoidostomy. (Contributo sperimentale alla fisiopatologia delle ileosigmoidostomie). *Ann. ital. di chir.* 19: 5, IV, 1909.

Cantelmo reports his experimental work on eight dogs. The histological structure and function of the colon are practically the same in the dog and man but in the dog there is no sigmoid in the true sense of the word, the descending colon passing to the ampulla without any flexure. Anastomosis between the ileum and the lower part of the colon in the dog is equivalent to ileosigmoidostomy in man.

Four of the author's dogs died; the mortality being therefore 50 per cent. In all of those which died the intestine was full because a purgative had not been given or an enema was not effective. In the only one of these dogs in which no operative measures had been taken to exclude the intermediate tract of the intestine, nutrition remained normal while in the three in which stenosis of the intermediate tract had been brought about, nutrition was very poor.

The report is supplemented by roentgenograms of the eight animals. From these and examinations of the specimens the author concludes that in the dog a low ileocolostomy has little effect in deviating the current of intestinal contents from its normal pathway. Unless operative measures are taken to bring about stenosis of the intermediate tract. The current passes over the anastomotic opening without becoming engaged in it and follows its old path unless the lumen of the ileum is obstructed in some other way, as for example by peritoneal bands. If the ileocolostomy is supplemented by stenosis of the post-anastomotic segment of the intestine, the current is deviated and passes through the new opening. When under the same experimental conditions the post-

anastomotic ileum is obstructed, the pre-anastomotic part of the colon assumes a compensatory function in acting on the chyme which flows back from the post-anastomotic terminal colon. The reflux into the intermediate colon following a low ileocolostomy does not seem to be any greater than is necessary for this compensating action.

In comparing low ileocolostomy with anastomosis between the ileum and higher segments of the colon, the author found that the former is less apt to be followed by reflux into the cæcum with stagnation of the intestinal contents. After a high anastomosis enormous accumulations of feces sometimes occur in the cæcum. Low ileocolostomy had the disadvantage of excluding a long tract of the intestine while high anastomosis is associated with the danger of serious reflux. The author believes that the former is less dangerous than the latter.

AUDREY G. MORGAN, M.D.

**Mandl F.** The Field of Application of the Primary and Secondary Drawing Through Procedure Following Resection of Rectal Cancer by the Sacral Route. Also a Demonstration of the Possibility of Artificial Prolapse and Its Application. (Zur Anwendungsbreite des primären und sekundären Durchzugsverfahrens nach Resektion des Mastdarmkrebses auf sakralem Wege gleichzeitiger Hinweis auf die Möglichkeit einer künstlichen Prolabierung und deren Ausnutzung.) *Arch. f. klin. Chir.* 1925, CXXXVI, 479.

Even though a number of leading surgeons have recently contended that a truly radical operation for cancer of the rectum can be accomplished only by a combined operation, the sacral operation is still regarded as the method of choice at the Hochenegg Clinic.

In the author's opinion the drawing through procedure is the safest method of treating the gut after resection of the rectum. He attributes Kirschner's poor results with it to its performance in the absence of a definite indication and the use of an incorrect technique.

(Angrene of the gut must be avoided. The part of the gut to be drawn through must be well nourished, therefore no blood vessel that is important for its nutrition should be ligated, and the part of the gut drawn through must not be subjected to too great tension. The proximal portion of the intestine must be applied to the anus or the peripheral portion of the gut without tension.)

In order to maintain the viability of the part of the gut drawn down, the wound cavity should be made as small as possible; the soft parts drawn toward the intestinal wall and care taken that gauze tampons are not placed tightly around the gut. In cases in which from the beginning errors of asepsis cannot be avoided, the surgeon should proceed antiseptically by wiping with Pregel's iodine solution.

Before the gut is drawn through the proximal portion should be closed completely with gauze.

In the peripheral portion of the rectum the mucosa should first be removed.

The technique as regards the portion of the gut brought to the anus should be as simple as possible.

In the after treatment, it is most important to prevent stenosis of the anus. Consequently the sphincter portion must be subjected to the systematic use of bougies, beginning about ten days after the operation.

The author discusses also the so called secondary drawing through technique of Weil. For cases in which after resection of the rectum, there is complete separation of the afferent portion of the gut from the anal portion with prolapse of the former, Weil suggested drawing the prolapsed portion of the gut through the peripheral portion after opening of its upper cicatricially contracted end. On the basis of quite a large number of favorable results obtained with this method the author suggests that in every case in which a resection can be undertaken with maintenance of the sphincter portion and in which any difficulty is experienced in the circular suture or the drawing through method the sphincter portion be left and the proximal portion of the sacral anus be loosely sutured. An attempt might then be made to produce a prolapse from the sacral anus by artificial methods. With the development of the prolapse the quite reliable secondary drawing through procedure could be done.

DECKS (Z)

**Powilewicz A Imperforate Anus Corrected by Operation Associated Megacolon** (*Imperforation anale opérée et guérie megacolon sigmoïdien concomitant*) *Bull Soc d'obst et de gynec de Paris* 1925 xiv, 637

The author reports the case of an infant which was brought for treatment on the third day after birth because of vomiting, abdominal distention and absence of bowel movements. Examination revealed complete absence of the anus. The skin over the anal region was perfectly smooth.

Operation was performed immediately. Through a longitudinal median incision and an incision joining the ischial tuberosities, the blind pouch constituting the rectum was found  $1\frac{1}{2}$  cm below the surface. This pouch was opened, drawn down and sutured to the skin. The infant recovered, and when seen a year later was normal. At that time, at the suggestion of Couvelaire, the intestine was examined with the X ray. This examination revealed marked distention of the sigmoid and of the lower part of the descending colon. As no secondary constriction had followed the operation, the distention was regarded as congenital.

In the discussion of this case COUVELAIRE cited a case of the same type in which the megacolon was not discovered until adult life. The patient, a woman, was operated upon in the third month of pregnancy for what was thought to be a cyst. Instead a dilated pelvic colon containing a fecal impaction was found. The fecal mass was broken up. After the operation the pregnancy continued normally to term.

ALBERT F. DE GROOT M.D.

**Madelung O W Empalement Wounds of the Anus and Rectum** (*Pfählungsverletzungen des After und des Mastdarms*) *Arch f klin Chir*, cxcvii 1

The author collected 276 cases of empalement wounds of the anus and rectum. Thirty five years ago he pointed out the importance of this type of injury and since that time has followed the subject with special interest.

Madelung describes the different methods by which such wounds may be produced and their character. They may be classified anatomically into wounds of the rectum and their complications such as wounds of the vagina, the connective tissue, and the bones of the pelvis; wounds of the bladder and urethra; and wounds of the peritoneum and the intraperitoneal organs.

The clinical course varies according to the severity of the injury. Of the patients whose cases are reviewed, twenty nine died within the first forty eight hours. The symptoms associated with each type of wound are described. Peritonitis in particular is discussed. Of 103 cases of involvement of the peritoneum, peritonitis developed in eighty four. Thirty two of the patients with peritonitis recovered. Of these, twenty three were subjected to laparotomy. Fifty two died.

Of the 103 persons sustaining a rectal wound opening into the peritoneal cavity, forty three recovered and sixty died. Of forty four who were subjected to laparotomy, twenty nine recovered and fifteen died.

In the diagnosis, attention should be given to the direction and depth of the empalement, particularly with regard to the presence of an opening into the peritoneal cavity. The author gives detailed instructions concerning the examination in different types of injury.

The patient should be treated in a hospital, since even when the external wound is small there may be a severe internal injury. When possible he should be transported to the hospital in the sitting position.

In doubtful cases a laparotomy should be performed without delay, involvement of the peritoneum is nearly always disclosed. Enemata should never be given under any circumstances. External suture of the wound is also dangerous. The treatment indicated in involvement of the different organs is described in detail.

SCHUEENMANN (Z)

## LIVER, GALL BLADDER, PANCREAS, AND SPLEEN

**Fetter W J The Present Status of Functional Tests of the Liver** *Atlantic M J* 1916 xix, 289

**Grier G W X Ray Diagnosis of Diseases of the Liver and Gall Bladder** *Atlantic M J* 1926 xix, 293

**MacLachlan W W G The Significance of Bile Pigment** *Atlantic M J* 1926 xix, 297

FETTER attaches definite clinical value to the liver function test with phenoltetrachlorophthalein according to the method of Rosenthal, a procedure in which



the rate of liver excretion is estimated by determining the amount of the dye retained in the blood serum. However when obstructive jaundice is present the value of the test is lessened because liver function and jaundice are parallel in degree. The dye test is indicated therefore in non obstructive cases.

The tolerance tests of the functional capacity of the liver when dealing with carbohydrates Fetter has found disappointing.

GRIER states that the X ray is of little aid in the diagnosis of liver disease unless the contour of the organ has been changed by disease. Direct evidence of carcinoma or other tumors can sometimes be obtained by roentgen examination and shadows of stones in the gall ducts or gall bladder are often demonstrated.

When stones fail to cast shadows their presence may be revealed following the use of sodium tetraiodophenolphthalein which is excreted through the liver and renders bile opaque to the X ray thus causing shadows corresponding to the shape of the gall bladder whenever it is possible for the dye laden bile to enter that organ. The absence of the gall bladder shadow when the technique is dependable indicates obstruction of the cystic duct.

Grier advocates the use of pneumoperitoneum in the differentiation of liver disease from other conditions in the hepatic region such as pathological masses above the diaphragm.

MACLACHLAN gives a comprehensive review of the theories of the formation of bile pigment citing the opinions of Blankenhorn, McNee, Mann, McMas, ters, Whipple, Hooper, Rous, Van den Bergh, Muelenbraht, Rich, and Bumstead.

He believes that bile pigments can be produced without the liver, the liver merely storing or excreting them. He uses the tests for bile pigments as an aid to early diagnosis. Attention is called to the fact that the classical examination of the sclera and skin in bright daylight seldom fails to reveal icterus if it is present.

When MacLachlan desires to make a test for bile pigments in the urine he instructs the patient to decrease his fluid intake in order to concentrate the urine. DE VOS W. CRUE M.D.

Snell A. M. The Clinical Application of Recent Studies on Jaundice. *Surg Gynec & Obst* 1920 31: 528

Recent physiological studies have definitely established the fact that bilirubin the principal pigment of human bile is formed outside the liver from hemoglobin. Mann and his coworkers at the Mayo Clinic have brought forward evidence to show that this transformation is effected chiefly in the spleen and bone marrow, presumably through the agency of the reticulo endothelial system.

According to McNee an excess of bile pigment in the blood stream may be due to (1) the excessive production of bilirubin from hemoglobin, (2) obstruction in the bile passages with subsequent reabsorption of bilirubin or (3) disturbance of the function of the polygonal liver cells and their failure to excrete bilirubin in quantities sufficient to keep pace with production.

The types of jaundice resulting from these conditions may be classified as hemolytic obstructive and toxic or infectious. A basis for differentiation is furnished by van den Bergh's test, which gives an indirect reaction in hemolytic jaundice a direct reaction in obstructive jaundice and either a delayed biphasic or direct reaction in the toxic or infectious type. This test while not an entirely satisfactory basis for such differentiation is most useful in the recognition of latent jaundice and the quantitative study of bile pigments in the blood stream.

It has been difficult to show changes in carbohydrate and protein metabolism in jaundiced patients by means of functional tests but in jaundiced animals diminished fructose tolerance and lowering of the blood urea occur quite constantly. Since a liberal supply of carbohydrate has been shown to protect the liver from toxic injury, and since defective carbohydrate metabolism is known to accompany jaundice diets high in carbohydrates and intravenous injections of glucose have been used clinically in such cases with gratifying results.

In studies of liver function in experimental animals and in patients a remarkable parallelism between the degree of jaundice and the degree of retention of dyes such as phenoltetrachlorophthalein is shown. The reasons for this are obscure but certain observations seem to show that the dye retention may be due to functional impairment in the liver cells as well as to a pathological change. This is demonstrated by the fact that dye retention accompanies intravenous injections of sublethal doses of dilute whole bile and that there is an immediate development of high grade dye retention in experimental animals after cholecystectomy and ligation of the common duct. In such cases no adequate pathological basis for the dye retention can be demonstrated. It is apparently not justifiable to reckon damage to the hepatic parenchyma due to jaundice in terms of phenoltetrachlorophthalein retention alone.

A number of other factors must be taken into account. Other constituents of bile such as taurocholic and glycocholic acid are retained during obstructive jaundice and may have a profound effect on the organism. Recent methods have been developed for the study of bile acids in the blood and at the Mayo Clinic experimental and clinical work is being undertaken to determine their role in obstructive and discolored jaundice.

Rodríguez M. C. Primary Hydropneumocyst of the Liver (Hidroneumocistoprimario del hígado). *Seminario* 1925 XXXIII 814

The author reports two cases of primary hydropneumocyst of the liver with postoperative septic complications. The first patient was a man of 37 years who came for treatment for pain in the right hypochondrium, slight fever, and a subicteric color.

of the conjunctiva. After he had been in bed under observation for a week he was suddenly seized with intense pain in the right hypochondrium associated with vomiting a small, rapid pulse, and a temperature of 35.9 degrees C.

On examination, the right lobe of the liver was found greatly enlarged and the liver dullness replaced by tympany. An eosinophilia of 4 per cent was present. The Wassermann test was negative. The stools were colorless. No parasites, ova, or vesicles were discovered. Roentgen examination showed the right side of the diaphragm to be very high and almost motionless, and disclosed, beneath the diaphragm, a semilunar clear zone bounded below by a straight line which moved when the patient's position was changed.

At operation, performed under ether anaesthesia, a cyst was found in the liver and a large amount of gas, pus, and vesicles was discharged. Free drainage was established.

On the twelfth day the patient's temperature was 40 degrees C, profuse sweating occurred, the pulse was small and rapid, and there was marked prostration. A frank septicæmia then developed with cardiac weakness and a temperature varying from 37 to 41 degrees C. Under treatment with autogenous vaccines, fixation abscesses and irrigation of the abscess cavity with a disinfectant, the patient recovered.

The second case was that of a man of 35 years who four years ago, had had pain in the right hypochondrium radiating to the shoulder. This pain ceased spontaneously but a short time before the patient consulted the author it recurred suddenly with nausea and vomiting, a temperature of 40 degrees C, frequent urination and copious diarrhoea.

On examination, the right lobe of the liver was found enlarged. Extending from the fourth rib to the costal margin was a tympanic zone surrounded by dullness. The intradermal hydatid test was weakly positive. The eosinophiles equaled 73 per cent. The Wassermann test was negative. The roentgen picture was similar to that in the author's other case.

Operation was performed under novocain adrenalina anaesthesia by the transpleurodiaphragmatic route. The abscess was found about 1 cm. below the surface of the liver. A large amount of gas and foetid pus containing vesicles was discharged. Free drainage was established. Signs of insufficiency of the liver developed a week later, and the patient died after two days.

AUDREY G. MORGAN M.D.

Ricci L. Cholecystitis and Diabetes. *Northwest Med.* 1926 xxv 191.

In injection experiments on dogs the author succeeded in demonstrating that lesions of the islands of Langerhans resulting in the symptoms of diabetes can be produced by hematogenous infection maintained for a sufficiently long period of time. The fact that he never succeeded in lowering the sugar tolerance of animals in which the gall bladder had been removed suggests that the infected gall bladder may

damage the pancreas, and particularly the islands of Langerhans, to such an extent as to produce diabetic symptoms.

Whenever the injections produced a febrile reaction, the micro organisms injected were found in the gall bladder. This explains in part at least, the well known fact that infections seriously aggravate the symptoms of diabetes. CARL R. STEINKE M.D.

Martin E. D. Complete Cholecystostomy Versus Cholecystectomy in Cases of Empyema of the Gall Bladder. *South M. J.* 1916 xix 193.

The author describes an original surgical procedure for the relief of the patient who is acutely sick from empyema of the gall bladder. This operation may result in a cure and requires no more time than that necessary for drainage of the gall bladder. It was first employed as a temporary and life saving measure. To date it has been performed in twelve cases with satisfactory and permanent results, but it is not recommended to replace cholecystectomy when the latter is indicated and can be done without increasing the risk.

The usual incision is made through the right rectus and the other abdominal viscera are packed off sufficiently to expose the gall bladder from its fundus to the cystic duct. The gall bladder is emptied with suction apparatus, swabbed out with iodine, and then packed with gauze to prevent the escape of pus when it is opened. It is incised from the fundus to the cystic duct. If the gall bladder is small, no effort is made to remove redundant tissue. If it is greatly distended, as much of its wall is cut away as necessary and all bleeding points are ligated. A cigar drain with a tube in the center is sutured against the mucous surface. No adhesions are freed except those interfering with the performance of the operation. The complications of the operation have been negligible. SIMSLEY C. LYONS M.D.

Giordano D. The Development of Carcinoma in Calculous Cholecystitis. (Della comparsa di carcinoma entro a talune colecisti calcinose). *Riforma med.* 1915 xli 1157.

Giordano has found cancer in one of every seven cases in which he has performed an operation for gall stones. He reports the case of a 63 year old woman in whom an operation for gall stones revealed an adenoma of the gall bladder. The patient was living and well fourteen years after the operation. Giordano believes that if the tumor had not been removed, it would probably have undergone malignant degeneration.

A man 61 years old who was operated upon for gall stones and found to have cancer had suffered from attacks of gall stone colic for twenty five years. Giordano believes that if this patient had been operated upon earlier his life would have been saved.

In another case a cancer of the pancreas was found.

Giordano concludes that the irritation of gall stones is often responsible for the development of

cancer and while he does not hold that operation should be performed immediately in every case of gall stone colic he believes that if a reasonable period of medical treatment does not cure the symptoms, the patient should be sent to the surgeon as operation may save him not only from gangrene or perforation of the gall bladder and suppurative cholangitis but also from malignant degeneration

AUDREY C MORGAN M D

**Castex M R and Galan J C Giardiasis of the Biliary Tract** (La giardiasis de las vías biliares)  
*Arch argent de enferm d 1919 digest 1925 1 30*

The giardia intestinalis is a flagellate protozoan which inhabits the intestine of man and some animals. It was first described by Lambi in 1859. In 1888 it was named lamblia intestinalis by Blanchard.

The parasite has two forms, the vegetative and the cystic. Its chief habitat is the duodenum and the upper part of the jejunum but it sometimes enters the gall bladder or bile ducts and in exceptional cases the stomach. It may be found in the faeces or the fluid obtained by sounding the duodenum. The manner in which the infection occurs in man is not known. Rats, mice and cats have been considered hosts of the parasite but the identity of the types occurring in man and animals has not yet been proved. Some investigators believe that the parasite is water borne as it has been found in the sediment of porcelain filters.

A greater number of the authors' patients with giardiasis have suffered from constipation than from diarrhoea. The syndrome includes dyspepsia, anorexia, loss of weight, painful distention of the abdomen and enlargement of the liver, the last sometimes associated with pain and occasionally associated with icterus. In some of the cases there was pain in the duodenal region coming on two or more hours after meals resembling that of duodenal ulcer or chronic cholecystitis and associated with vomiting, eructation or nausea. In almost all of the cases the condition was accompanied by headache, pain in the nape of the neck, physical and mental prostration, insomnia, neuralgia and painful precordial oppression. In some cases there were symptoms resembling those of true cholelithiasis. Ieroduodenitis was found in many. The clinical details of nine cases are given.

Giardiasis is one of the most difficult parasitic diseases to cure. The authors have obtained the best results with alvarsan. Experiments on animals have shown that salvarsan must be given in large doses but this is more or less dangerous as the liver is enlarged and hepatic function is more or less insufficient. Kantor recommends beginning with 0.60 gm and increasing the dose rapidly to 0.90 gm.

AUDREY C MORGAN M D

**Coffey R C Dilatation of the Common Bile Duct in the Absence of a Functioning Gall Bladder**  
*Ann Surg 19 6 lxxviii 479*

The authors have demonstrated by experiments that when a duct is implanted without valve forma-

tion the duct dilates but when a valve is produced it does not dilate. The pressure within the gall ducts is much less than the static pressure within the bowel. Peristalsis within the duodenum produces an interval of lower pressure or a relative vacuum during which bile may escape into the duodenum. When the duodenum is at rest the valve at the outlet of the duct is closed and bile must remain in the biliary system.

The gall bladder is the chief reservoir for bile when digestion is not going on. In the absence of a functioning gall bladder due to disease or removal of the organ the bile ducts become dilated. This dilatation is not entirely harmless as the author demonstrates by the histories of two cases in which the gall bladder had been removed for gall stones. In both of these cases the symptoms continued and at a second operation performed some time later the common duct was found dilated to the diameter of  $\frac{3}{4}$  in and greatly thickened. The bile within the duct was normal in color and consistency and there was no evidence of stone formation or other obstruction.

The author concludes that dilatation of the ducts is alone sufficient to account for the persistence of symptoms.

WILLIAM J PICKETT M D

**Chiray Lebon and Gozlan A Study of External Pancreatic Insufficiency as Indicated by the Enzymes in the Duodenal Juice Removed with a Sound** (Étude de l'insuffisance pancréatique externe par le dosage des enzymes dans le suc duodénal prélevé par tubage) *Bull et mém Soc méd d hôp de Par 1925 xli 1646*

The authors studied pancreatic function by determining the enzymes in the duodenal juice before and after the administration of a pancreatic stimulant. While there are many substances that stimulate pancreatic secretion most of them are unsatisfactory for such studies as they stimulate also the secretion of the stomach, liver and intestines as a result the pancreatic juice is greatly diluted and the dilution brings about a decrease in the concentration of the enzymes that may appear pathological when it is not. This source of error was found with the use of hydrochloric acid ether, peptones, insulin, histamin and secretin.

Of the substances investigated only milk gave a practically constant increase in the enzymatic power of the duodenal juice and as this fact was discovered only recently exact measurements of the normal and pathological values of the external pancreatic secretion have not yet been worked out. From the findings made to date it appears that the lipase activity of the duodenal juice collected under the conditions mentioned should exceed 50 c cm of decinormal soda and the proteolytic activity should exceed 10 c cm of decinormal soda.

After the introduction of the duodenal sound from 40 to 60 c cm of a solution of 33 per cent magnesium sulphate is first introduced to empty the gall bladder of its contents. After the evacuation of all of the

gall bladder bile and a few cubic centimeters of Bile C, 60 c cm of warm whole milk is injected slowly. The opening of the sound is then closed to keep the milk from flowing out. At the end of half an hour the duodenal juice is removed by aspiration or siphonage. Sometimes it is necessary to inject a little warm water to start the flow. In the duodenal fluid removed in this way the ferments are measured at intervals of ten minutes the lipase being determined by the author's modification of Bondi's method and the trypsin by the method of Gaultier, Roche and Baratte.

Damade and Grailly attribute the stimulating action of milk on the pancreas chiefly to the milk fat as they found a greater increase in the ferments after the use of whole milk than after the use of skimmed milk.

AUDREY G. MORGAN, M.D.

Escudero P. H., Terrada, H. M. and Gallino M.  
Cystic Tumors of the Head of the Pancreas  
Roentgenological Diagnosis (Tumores quísticos de la cabeza del páncreas diagnóstico radiológico)  
*Arch. argent. de enferm. d. apar. digest.* 1925 1 342

A discussion of the X-ray picture of pancreatic tumor of the cystic type is followed by a brief review of the clinical findings in a case studied by the authors. In the latter the tumor was visible in the right epigastrium and was palpated as an irregular, firm mass located chiefly in the right epigastrium and the umbilical region. It could be displaced over into the left side of the abdomen and a couple of fingerbreadths downward without causing pain but pressure over the left pole or attempts to displace the mass upward resulted in intense pain in the lumbar region. The tumor itself was insensitive.

X-ray examination at the time of the ingestion of the contrast medium and at the fourth, sixth, eighth, and eighteenth hour demonstrated only a long vertically placed stomach with the floor of the antrum below the level of the iliac crest the whole displaced to the left, and progressive stages of filling of the duodenum, which encompassed the tumor forming a large C with its concavity to the left. The duodenum was somewhat dilated, and its shadow curve was cut off suddenly as though the duodenal lumen had been closed by compression at the point where the inferior and ascending part crossed the vertebral column. Good roentgenograms were obtained only by filling the stomach with contrast material and then expressing the material manually through the pylorus into the duodenum. It was impossible however to force the contrast material or to introduce the duodenal sound beyond the point of seeming compression.

The condition was diagnosed as a tumor compressing the stomach at the greater curvature causing deformity of the antrum and dislocation of the pylorus and gravely compromising gastric evacuation. Operation disclosed a cystic tumor compressing the stomach and duodenum but without adhesions. Upon incision, the mass suggested a round cell sarcoma which was not removable. A gastro-enteros-

tomy was effected with relief of the symptoms due to poor evacuation of the stomach and duodenum.

JOHN W. BRENNAN, M.D.

Ashby, H. T. and Southam A. H. Splenic Anæmia of Young Children Treated by Splenectomy  
*Brit. M. J.* 1926 1 411

Splenic anæmia of young children, sometimes called von Jaksch's disease occurs in the first three years of life and is characterized by marked enlargement of the spleen and general debility. The condition is chronic and in advanced cases the prognosis is unfavorable.

In the treatment the X-ray, arsenic and iron have been found of little value. The authors report three cases treated during the past year by splenectomy preceded by roentgen irradiation and blood transfusion. In all of these cases there has been apparently rapid improvement in both the general health and the blood picture.

I. EDWARD BISHKOW, M.D.

Whipple A. O. Splenectomy as a Therapeutic Measure in Thrombocytopenic Purpura Haemorrhagica  
*Surg. Gynec. & Obst.* 1926 41 329

The etiology of purpura hæmorrhagica is not known the pathology ill defined and the differential diagnosis at times difficult. In the treatment, splenectomy is done because in many cases of chronic purpura the spleen is enlarged and as the removal of the normal spleen results in an initial increase in blood platelets the procedure seemed logical in a disease characterized by a low platelet count. As the reticulo endothelial cells get rid of jaded or excessive blood platelets it seemed logical to assume that in a disease such as purpura hæmorrhagica in which the platelets are few or absent, some part of this system is overactive and if the overactive cells are largely limited to the spleen the removal of this organ would promise good immediate and probably permanent results. On the other hand if the entire reticulo endothelial circle is involved splenectomy would remove only a part of the overactive apparatus and in the presence of such a profound vascular disturbance as that in the acute form of purpura would be extremely hazardous.

It appears that in purpura hæmorrhagica the blood platelets are formed in normal numbers but are destroyed by overactive phagocytosis in the spleen and other parts of the reticulo endothelial apparatus.

Purpura hæmorrhagica is characterized by five fairly definite findings (1) paucity or absence of platelets (2) a prolonged bleeding time (3) failure of the clot to retract (4) a normal clotting time and (5) the appearance of petechiæ in the skin of an extremity below a tourniquet applied to shut off the venous but not the arterial flow.

When once the diagnosis has been made it must be determined whether the disease is present in the chronic recurrent form or in the acute fulminating form. The former type is usually cured by splenec-

tomy promptly and permanently while the latter is seldom influenced favorably by it

Of eighty one collected cases eight were operated upon during the acute stage with seven deaths. In seventy three cases of the chronic form there were only six postoperative deaths

HARRY W. FINK, M.D.

# Mayo W. J. The Mortality and End Results of Splenectomy *Am J M Sc* 1926 cliv 313

Before recommending the removal of a diseased spleen the physician must satisfy himself that cure by medical measures cannot be expected and that the prospects of cure by splenectomy are sufficiently good to make the operation worth the immediate risk to the patient

The author's purpose in this communication is to analyze briefly from the standpoint of operative mortality the experience with 417 cases in which splenectomy was performed and to comment on the after history of the patients as related to the operation

The spleen is a hemolymph gland which belongs to the reticulo endothelial system and has three known functions. Its first function is to filter from the blood stream micro-organisms and various toxic agents. These it destroys or sends to the liver for destruction or detoxication. The failure of the spleen to function as a filter results in its enlargement as in malaria and syphilis and the chronic toxic splenomegaly of the splenic anemia type

The second function of the spleen is to produce white blood cells, one of the most important being the lymphocyte without which there would be no healing of wounds or repair in the body. All of the white blood cells have defensive functions, especially the large mononuclear endothelial leucocyte. In cases of leukemia a malignant expression is manifested in the unlimited production of white blood cells which have the power of oxidation through their nuclear activities but are without function because of the lack of cytoplasmic control

The third function of the spleen is to destroy worn out or deteriorated red blood cells, a process in which bile pigments are found. An unnecessary destruction of the red blood cells which produces the sub-oxidation of anemia is one result of excessive splenic activity due to an increase in the size of the spleen from any cause. A specific action of the spleen on red blood cells is seen in its destruction of red cells with increased fragility as in cases of hemolytic icterus and the destruction of the blood platelets which is characteristic of chronic hemorrhagic purpura. Possibly the enlargement of the spleen in these two conditions as well as in certain other conditions is to some extent the result of work hypertrophy

Sufficient clinical experience is now at hand to demonstrate beyond peradventure that in a number of diseases which would otherwise prove fatal removal of the spleen will effect a cure

The statistics of early splenectomy show that the mortality was formerly from 25 to 35 per cent. The

number of cases not being large it is fair to assume that the high death rate led to delay of operation until the patient's condition grew so serious that splenectomy was certainly more than justified as a last resort

A vicious circle was thus established in which the high mortality brought about a delay responsible for a still higher mortality. Operative methods in the early history of splenectomy left much to be desired but better technique of which Balfour's method of splenectomy is a fine example has greatly reduced the surgical death rate

From April 1, 1904 to January 1, 1926 splenectomy was performed in the Mayo Clinic in the following 417 consecutive cases

Cause	Hospital mortality		
	Cases	Cases	Per cent
Disease of the spleen due to infection and toxic agents	190	29	15.3
Abnormality of the white blood cells	50	2	4.0
Abnormality of the red blood cells	147	7	4.8
Splenic neoplasm	10	3	30.0
Surgical accident	10		
Indefinite and unclassified	10	1	10.0
<b>Total</b>	<b>417</b>	<b>42</b>	<b>10.3</b>

From this table it is seen that the average hospital mortality was slightly more than 10 per cent. All of the deaths that occurred in the hospital without regard to the cause or the time are included. If one adopted the thirty day rule that is considered that if death took place more than thirty days after operation without surgical complication it was not an operative death there would be a marked improvement in these statistics but unless an arbitrary method of classifying mortality is adopted the tendency is unconsciously perhaps to improve the statistics. Moynihan speaking of comparative statistics says "Statistics can be made to tell anything even the truth." Certainly the method of computing the hospital mortality with the operative mortality at least gives the worse side of the picture

A survey of the foregoing experience demonstrates clearly that the removal of the spleen is compensated for by the widespread tissues of the reticulo endothelial system of which physiologically the spleen is a none too important part. The diseases with which the spleen is concerned are complex and pathological processes are seldom primary in this organ. It often acts merely as an agent of destruction

From the surgical standpoint it may be said that if the patients are properly rehabilitated and on the up grade as the result of proper methods of preparation the mortality of splenectomy will be less than 5 per cent

Experience has shown that the spleen should never be removed for a chronic condition when the patient is on the down grade. The dangers of the operation are due largely to delay and an unfortunate choice of cases

**Leotta N.** A Contribution on the Surgery and Physiology of the Spleen. Changes in the Blood Picture and Basal Metabolism Caused by Splenectomy (Contributo alla chirurgia e fisiologia della milza alterazioni ematologiche e del metabolismo basale determinate dalla splenectomia) *Ann ital di chir* 1923 IV 1144

Leotta reports the case of a 13 year-old boy who was subjected to splenectomy because of rupture of the spleen. The operation was followed immediately by a decrease in the red cells and hemoglobin but at the end of a month this was completely compensated. There was also a leucocytosis chiefly a lymphocytosis, which reached its maximum in twenty days and then decreased slowly. At the end of eight months however, the number of leucocytes was still about 15,000. A slight temporary increase in the blood platelets and a slight increase in the resistance of the red cells were noted, but there was no change in the coagulation time. These changes showed a loss of splenic function and a disequilibrium between hæmatopoiesis and hæmatolysis but were of brief duration and sufficiently compensated. The child gained normally in weight and height in the eight months, and no anatomical changes occurred except slight enlargement of the lymph glands especially the cervical carotid and inguinal gland.

The basal metabolism showed a marked increase. The average basal metabolism in a boy of 13 years is from +38 to +40 while in the first four months after the operation in the case reported it was +57. It then decreased progressively to +36, +32, and +51, and remained at +51 at the end of the eighth month. In discussing the significance of the increase the author urges further research on the endocrine function of the spleen and particularly the relations of this organ to the thyroid.

AUDREY G. MORGAN M.D.

#### MISCELLANEOUS

**Patel and Labry.** Large Closed Cysts of the Urachus (Contribution à l'étude des gros kystes fermés de l'ouraque) *Gynec et obst* 1933 XII 449

There are three principal types of malformation of the allantois: (1) an umbilicovesical fistula, representing complete permeability of the canal; (2) a canal closed at the umbilical end but open into the

bladder causing a special form of diverticulum; (3) a urachus impermeable at both ends forming a true cyst of the urachus. The authors report a case of the last type.

The patient was a woman of 37 years who had always enjoyed excellent health. About three years before she came for treatment she had an attack of intense abdominal pain with vomiting which seemed to be an ordinary attack of indigestion. During the last year her abdomen had been enlarging and constipation had developed. There were no urinary disturbances except increasing frequency of micturition.

On examination a diagnosis of large cyst of the ovary was made but at operation the cyst was found to lie in the cellular tissue outside the peritoneum and to involve the urachus instead of the ovary. The uterus and adnexa were normal. The cyst was not continuous with the bladder but adherent to it and some difficulty was experienced in dissecting it free. The wall of the bladder was injured slightly but the mucous membrane was not opened. A few sutures were placed in the bladder wall and the cyst was removed entire. The peritoneum and abdominal wall were then closed and a retention catheter was left in for four or five days. Uneventful recovery resulted.

Closed cysts of the urachus are rare; the authors have found only ten cases in the literature verified by operation or autopsy. There are no pathognomonic signs. The most frequent erroneous diagnosis is cyst of the ovary. The condition usually causes general enlargement of the abdomen and sometimes causes pain. A cyst with a median position and elongated spindle shape and adhesion to the umbilicus has been given as a pathognomonic sign but these characteristics are obliterated when the tumor becomes large. However operation is indicated even when an accurate diagnosis is impossible.

The cyst should be extirpated since when punctured it refills rapidly. An attempt should be made to perform an extraperitoneal operation as usually very intimate adhesions are found and dissection requires more time than it is worth. No harm is done if the adherent parietal peritoneum is partially excised. When the cyst is low, great care is necessary in its dissection from the bladder. Otherwise the operation is easy and without danger.

AUDREY G. MORGAN M.D.

# GYNECOLOGY

## UTERUS

**Vanverts J** The Obstetrical Results of Shortening of the Round Ligaments (A propos des résultats obstétricaux du raccourcissement des ligaments ronds) *Bull Soc d'obst et de gynéc de Par* 1925 xiv 695

The author has performed eighteen operations to shorten the round ligaments. In seven the ligaments were plicated intra abdominally in three they were fixed to the abdominal wall by the Dartigues method and in eight they were fixed to the posterior surface of the uterus by the method of Dolens and Webster. In all but two cases the operation was performed for mobile retroflexion and it was necessary to free the uterus from adhesions.

Fifteen of the patients were re examined after an interval of not less than several months. In all the corrected position of the uterus was maintained and the menstrual and intermenstrual pain attributed to the retroflexion had been relieved. In one the size of the uterus had been decreased.

Four of the patients subsequently passed through normal pregnancies. No time relation could be established between the operation and the occurrence of pregnancy but in the case of a patient who had previously aborted in the third month the course of pregnancy was probably influenced by the operation as this patient subsequently carried a twin pregnancy nearly to term.

When the uterus is fixed the Webster operation has the advantage of covering the raw surfaces produced by the breaking up of the adhesions. Although this operation causes considerable displacement of the adnexa it does not seem to interfere with pregnancy. **ALBERT F DE CROAT M D**

**Vogt E** Prolapse Operations and the Ability to Bear Children (Vorfalloperationen und Gebärfähigkeit) *Ztschr f Geburtsh u Gynaek* 1925 lxxvii 118

After presenting communications in which it is recommended under certain conditions to perform sterilization simultaneously with an operation for prolapse (Doederlein Reifferscheid) the author states that at the Mayer Clinic operations for prolapse are regarded as permissible even during the age of child bearing but simultaneous sterilization is not approved.

Operations recommended are anterior colporrhaphy with suture of the bladder and the vesicovaginal septum and colpoperineoplasty with suture of the levator ani muscle. In these procedures the position of the uterus is disregarded.

During the period from 1907 to 1923 ninety five women were observed who bore children after

an operation for prolapse. After the operation there is no interference with cohabitation conception or pregnancy. The first birth following the operation occurred on the average after two years.

In a review of the course of labor attention is attracted to the frequency of forceps deliveries. This is due to the fact that for the protection of the scar and the prevention of recurrence in occipital presentations the application of the forceps to the rotated head with simultaneous median incision of the scar is considered the best procedure. However the figures show also that natural delivery is not made more serious for the mother or the child. The puerperium of the women previously operated upon was normal. The best protection against recurrence is restoration of the perineum immediately after delivery. **BOCK (G)**

**Seymour H F** Endoscopy of the Uterus With a Description of a Hysteroscope *J Obst & Gynec Brit Emp* 1926 xxxiii 52

The instrument used by the author for endoscopy of the uterus is a straight brass tube 28 cm long with a 6 or 9 cm bore and a light at the distal end. There are three channels in the wall of the tube one for the rod which carries the light and two which are connected with an electric suction apparatus. The direction of the instrument during its use is indicated by an aluminum handle. The tube with a 6 mm bore is for the postclimacteric uterus and cases in which dilatation to over 10 mm is difficult while the tube with a 9 mm bore is for general use.

In the preparation of the patient for examination a glycerine tampon is placed against the cervix for two nights to aid in dilatation. The cervix is then slowly dilated to 1 mm and the hysteroscope carefully introduced. A swab on a sponge holder keeps the lamp clear of blood and is withdrawn when the instrument is almost to the fundus. It is re introduced only if the lamp becomes smeared. The suction apparatus is started before the introduction of the hysteroscope.

The endometrium is sectionally scrutinized by turning the hysteroscope about and partially with drawing and re inserting the lighted end.

The instrument and technique described have the advantage of simplicity and have proved of aid in diagnosis and the removal of satisfactory specimens. The author believes that they will be found of value also in treatment. **MAGNUS P URVES M D**

**Cron R S** Chancro of the Cervix with a Report of Two Cases *Am J Obst & Gynec* 1926 xi 378

The author reports two cases of chancro of the cervix especially from the standpoint of infection and diagnosis. One of these cases demonstrates the

infectiousness of gonorrhœa and syphilis before the appearance of symptoms. The patient had sexual intercourse with male No. 1 three days after he had sexual intercourse with a prostitute. Neither previously nor at that time did male No. 1 have any symptoms or signs of venereal disease. Two days later the patient had intercourse with male No. 2. Male No. 1 developed a urethral discharge and eventually a hard chancre. The patient also contracted both gonorrhœa and syphilis; the latter manifested by a lesion in the cervix but transmitted only gonorrhœa to male No. 2. The author believes that the patient and male No. 1 had abrasions of the mucous membrane sufficient to permit the entrance of the spirochæte.

Cron describes the characteristics of chancre of the cervix. This lesion must be differentiated from simple cervical erosions, chancroid, herpes simplex, tuberculous ulcer, gonorrhœal maculæ and carcinoma. Simple erosion and carcinoma are the most difficult to differentiate.

The author's conclusions are the following:

1. The primary lesion of syphilis is frequently found in the cervix. Its apparent rarity is due to the fact that it is frequently overlooked and rapidly undergoes involution.

2. Routine visual examination of the cervix especially in freshly infected syphilitic women would demonstrate a higher percentage of primary lesions.

3. The spirochæta pallida may be transmitted by conjugal relations in the absence of a macroscopically visible lesion in the transmitter.

4. A negative blood Wassermann reaction during the primary stage does not rule out syphilis.

5. The characteristics of the primary lesion on the cervix may vary so widely that a diagnosis can be established only by demonstrating the spirochæta pallida with the dark field microscope or by microscopic examination of tissue excised from the lesion and positively, only by the demonstration of the spirochæta pallida in the characteristic tissue lesion.

Mosher G. C. The Incompatibility of Pregnancy and Fibroids of the Uterus. *Am J Obst & Gynec.*, 1926, 11: 334.

Weiss, E. A. The Treatment of Fibroids of the Uterus. *Am J Obst & Gynec.* 1916, 6: 343.

Mosher states that pathological changes in a myoma or fibroma associated with pregnancy are indicated by pain, hemorrhage, signs of degeneration, a rise in the temperature or a high leucocytosis.

If the tumor is situated at the brim of the pelvis so that it will cause dystocia, myomectomy or hysterectomy must be considered. Abortion is contra-indicated on account of the increased risk of hemorrhage, traumatic injury and septic infection. Mosher believes that the cesarean section operation is done in many instances without a proper indication.

The great majority of cases of fibroids associated with pregnancy run a favorable course after the danger of postpartum hemorrhage is past. The tumor may disappear or become so small that it is no longer palpable.

Each case must be treated according to its particular requirements. The results depend upon the judgment and skill of the obstetrician. Mosher reports seven cases.

Weiss states that his attitude is decidedly conservative in uncomplicated cases of fibroids but that when complications are present he favors operation. When the preservation of the maternal and ex function is desirable, removal of the fibroid by myomectomy or resection is best. The cases most favorably affected by irradiation are those of the bleeding variety. Patients with diabetes, tuberculosis or cardio-renal disease are usually treated best with radium. In every case for which radium treatment is considered, curettage should be done as a diagnostic measure before the introduction of the radium. In the cases of patients less than 40 years of age, great care is necessary in the use of radium in order to avoid causing a premature menopause. In many cases of fibroid, operation may be safely deferred until definite indications arise.

During the past five years Weiss has obtained very satisfactory results in a fair percentage of cases treated with radium but he still adheres to the general principle that when there is any doubt operation is the procedure of choice.

In the discussion of these reports Weiss stated that in cases of pregnancy an X-ray examination with pneumoperitoneum before the fifth month will outline the nodules of a fibroid tumor. The obstetrician can then determine whether any of the nodules will obstruct labor. After the fifth month, the X-ray will show the outlines of the fetus in the fibroid.

In cases in which cesarean section is necessary, Weiss is not in favor of performing hysterectomy at the same time unless degenerative changes are present.

Mussey reported that approximately 2 per cent of the women who come to the Mayo Clinic for treatment of fibroid tumors are pregnant. By conservative treatment under careful observation, practically all of these patients can be carried through to term. Most of them are delivered spontaneously or with the use of low forceps or midforceps. Cesarean section is necessary in only a very few cases.

Polak reported that in more than thirty years of obstetrical work he was only once obliged to perform an abdominal operation for obstruction of labor due to an incarcerated fibroid. Of late he has been performing partial resection of the uterus much more frequently than hysterectomy.

Schnitz stated that in the large gynecological clinics there should be at least one member of the staff who is thoroughly trained in radiation therapy and that all radiation therapy should be under his supervision. To refer patients with gynecological



conditions to the radiologist is a mistake as the radiologist does not know how to treat them gynecologically and the gynecologist cannot tell the radiologist how to treat them radiologically.

RONZ reported that he has never seen a case of placenta previa in a pregnant woman with uterine fibroid. He believes that the only indication for operation for fibroid tumors during pregnancy is pain that cannot be controlled by large doses of morphine.

L. I. CORNELL M.D.

#### ADNEXAL AND PERIUTERINE CONDITIONS

Daniel C. A Study of the Interstitial Portion of the Normal Fallopian Tube (Étude sur la trompe interstitielle normale) *Gynec et obst* 1926 xlii 1

The study reported in this article was made on thirteen uteri four of which were infantile and the rest adult. It was found that the interstitial portion of the tube is a separate entity in the adult uterus but up to puberty is more nearly like the uterine cornu. The configuration of the lumen in this portion is less definite than that of the outer portion with its four large longitudinal plicae and varies in complexity with age. In the senile uterus it is flat. In half of the specimens a 0.5 mm. catheter could be passed.

As the epithelium approaches the uterine ostium it becomes more uterine in type and near the uterus there is a thin internal longitudinal muscle layer not present in the rest of the tube. The entire muscle here shows a greater connective tissue content. Also toward the uterine end especially in infants there may be gland like conformations of the plicae and a small amount of cellular tissue resembling uterine stroma.

In the normal state the tube is closed and a pressure of from 60 to 100 mm. Hg is necessary to demonstrate its permeability. During menstruation its mucosa shares in the hyperæmia of the neighboring endometrium and it becomes closed as it does also early in the course of pregnancy. The similarity of

the structure of this mucosa to that of the uterus explains how placentation is possible in this portion of the tube when the tubal mucosa does not share in the formation of the fetal envelope.

The author suggests that the interstitial portion of the tube might be used for the medical treatment or surgical drainage of conditions in the outer part of the tube just as it is now used for inflation in sterility and the production of pneumoperitoneum.

GOODRICH C. SCHAUFFLER M.D.

#### MISCELLANEOUS

Fogelson S. J. The Non Specific Antigenic Effect of Spermatozoa upon Fertility *Surg Gynec & Obst* 1926 xlii 374

Fogelson performed experiments on rats to determine if possible a serological explanation for the type of sterility occurring in the human being which has no apparent anatomical or physiological basis. In confirmation of the work of others he found that conception can be temporarily inhibited by sensitizing the female rat to any spermatozoa protein. This antigenic effect is not specific for species equally good results can be obtained from the spermatozoa of any species.

The mechanism causing the sterility is still not clear only precipitins being definitely present and their significance an unknown factor. The role of agglutinins may be considered negative since as marked clumping was seen in the sera of non sensitized animals especially after inactivation as in specific sera. Lysins were never seen and toxins which fixed or rendered the spermatozoa immobile were so variable that no opinion regarding them is justifiable from these experiments.

The results cast no light upon the etiology of so called idiopathic human sterility but tend to eliminate protein sensitization as a causative factor and suggest the possibility of devising a contraceptive technique with a definite scientific basis.

HARRY W. FINK M.D.

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

**Mahnert A** Studies of the Effect of Iodothyreo globulin on Diuresis and Metabolism in Pregnancy (Studien ueber die Wirkung von Jodthyreo globulin auf die Diurese und den Stoffwechsel bei Schwangeren) *Arch f Gynaek* 1925 **xxvi** 1 5

Mahnert investigated the effect of thyroid treatment in various types of oedema in normal and diseased pregnant women by studying the metabolism following the intravenous injection of iodothyreoglobulin. In only a certain percentage of the normal women were metabolism and diuresis increased by the iodothyreoglobulin. The reason why a few isolated cases were refractory could not be ascertained.

Pathological cases behaved similarly. In most of the cases the metabolism was increased to the extent that uric acid, urea, and sodium chloride were excreted in increased amounts. Moreover there was an increase in the cholesterol content of the serum with a simultaneous decrease in the albumin content followed later by a decrease in the cholesterol content.

The author compares the disturbances of metabolism and water balance brought about in pregnancy by the injection of iodothyreoglobulin with the symptoms of hypothyreosis occurring in the non-pregnant state and agrees with the theory first advanced by Knaus that the function of the thyroid is decreased during pregnancy. This accounts for the good effect of thyroid medication as well as of iodothyreoglobulin injections in such cases and for the fact that evidences of hyperthyroidism are never noted subsequently. In the cases in which the thyroid treatment seems to have no effect it may be slow in its action or the efficacy of the thyroid preparation may be diminished by the acidosis occurring in pregnancy. The activity of the hormone depends upon the degree of acidity of its environment.

In conclusion attention is called to the similarity of the sequelae following the administration of thyroid substance and those following the loss of weight at the end of pregnancy. The latter are attributed to increased function of the organs of internal secretion especially the thyroid of the child.

WERNER (G)

**Dujol G and Clement R** Spontaneous Rupture During Pregnancy of a Uterus Previously Subjected to Caesarean Section (La rupture spontanée pendant la grossesse d'un utérus antérieurement césarié) *Rev franç de gynéc et d obst* 1925 **xx** 5 9

The authors have collected twenty six cases of spontaneous rupture of the uterus in patients who had been subjected to caesarian section.

Statistics of France, America, and England show that uterine rupture occurs after caesarean section in from 3 to 4 per cent of the cases, but these statistics include also ruptures occurring during labor.

The authors estimate the incidence of rupture before labor at 1.56 per cent. The symptoms are classical. A sudden sharp pain in the abdomen which may or may not cause syncope is followed by the less rapid appearance of the signs of intra-abdominal hemorrhage. Frequently there is vomiting. On palpation, the abdomen is tender particularly in the iliac fossa. The uterus is not well mapped out but the fetus seems to be felt under the skin and presents abnormal mobility. A few hours after the rupture abdominal meteorism is present. On auscultation no fetal heart is heard.

Sections of the ruptured scar show an intense vascularization with traces of an old infection. When the placenta has been inserted at the scar syncytial cells are found. The author reviews the theories as to the causes of weakness of the uterine scar.

Prophylactic treatment consists in watching patients who have been subjected to caesarean section and admitting them to the hospital before labor begins. If a conservative operation is possible, the Portes technique is indicated but in the attempt to be conservative care must be taken not to expose the patient to any unnecessary risks. When haste is necessary on account of the patient's poor condition the Porro operation is indicated. A supra-cervical hysterectomy may then be performed later.

SALVATORE DI PULNA, MD

**Riddel J** Rupture of the Uterus During Pregnancy *J Obst & Gynaec Brit Emp* 1916 **xxiii** 1

Rupture of the pregnant uterus before labor is exceedingly rare. It may occur in diseased degenerated or previously injured uteri as the result of indirect violence. It may be caused also by interstitial pregnancy, a new growth, hydatidiform mole, weakness of a caesarean section or other scar, or pregnancy in a rudimentary uterine horn. Traumatic rupture may be caused by sounds, curettes, bullets, crushing or direct violence.

Rupture of the uterus is more common in women who have borne a number of children than in women pregnant for the first time because repeated pregnancies cause degeneration of the wall of the uterus. Infanticide is rarely an etiological factor as women with an infantile type of uterus are usually sterile.

Tears occurring before labor are usually found in the anterior or posterior wall or at the summit of the fundus. They may be longitudinal, transverse or oblique. They are usually linear but sometimes irregular. If contractions occur, the laceration enlarges, allowing the escape of the fetus into the peri-

When the turning has been completed the lock of the forceps lies close to the perineum and holds in place. It is not necessary for an assistant to hold this blade while the other is being applied.

To apply the posterior blade two fingers are inserted into the vagina between the posterior cervical lip and the fetal head and with the other hand the posterior blade is inserted between the fetal head and the cervix under the control of the fingers. When the forceps are locked they lie in the anteroposterior diameter of the pelvis. Traction on the head is made in the direction of the handles slightly more downward than upward. As the hand goes deeper in the pelvis its rotation is spontaneous. If rotation has not taken place it can be accomplished with the forceps. Before extraction through the outlet is begun the sagittal suture should be perpendicular to the pelvic outlet.

ROLAND S. CROW, M.D.

**Ferrère M.** A Case of Serious Eclampsia During Labor. Fourteen Convulsions and Slight Loss of Consciousness. Injection of 12 Cgm (18 Gr.) of Morphine (Upper Limit) in Ten Hours. Low Forceps Delivery After Episiotomy for Atresia of the Vulva. Delivery of a Living Infant Weighing 3 150 Gm. Cure of the Mother and Survival of the Infant. (Eclampsie grave du travail avec 14 crises et atteinte légère de l'intellect. Injection de douze centigrammes de morphine—plafond morphinique—en dix heures. forceps à la vulve après épisiotomie latérale pour atresie vulvaire. fille vivante de 3 kilos. 150 guérison de la mère et survie de l'enfant.) *Bull Soc d'obst. et de gynéc. de Par.* 1925, xiv, 660.

Important in the treatment of eclampsia with morphine is an exact knowledge of the quantity of morphine which should be given to produce a cure. There is no advantage in giving more than that amount. When the convulsions continue in spite of massive doses it is well to know at what point the injections should be stopped. The maximum beneficial dose of morphine is 12 cgm, but more can be given to an eclamptic without danger.

The effect of morphine on the nervous system is sometimes gradual. In the case reported by the author the occurrence of three convulsions after the final dose did not alter the originally favorable prognosis. Between the convulsions the patient recovered consciousness. Ordinarily no such recovery occurs after the first three or four convulsions.

The morphine was administered in divided doses 1/2 cgm after each crisis.

ALBERT F. DE GROU, M.D.

### PUERPERIUM AND ITS COMPLICATIONS

**Wuesthoff H.** A Review of Puerperal Deaths in the Last Twenty Six Years (Kritik der puerperalen Todesfälle der letzten 26 Jahre). *Monatsschr f. Geburt u. Gynäk.* 1925, lxx, 189.

In the University Gynecological Clinic at Königsberg the total puerperal morbidity averaged 14 per cent including all cases in which the temperature

rose to 38 degrees C, even those in which this rise lasted only one day. In spite of the increase and eventual tripling of the number of births the annually calculated percentage fell from 26 per cent in 1906 to 13.5 per cent. The improvement is due to modern methods of disinfection, the more extensive use of rubber gloves even in simple vaginal examinations of pregnant women, increased knowledge of the nature of fever in pregnancy, early and careful delivery in cases with fever, exact knowledge of the indications for obstetrical operations and care with regard to the vaginal flora, particularly hæmolytic streptococci.

In the cases reviewed there were sixty three deaths, a puerperal mortality of 0.3 per cent. Nine teen of the women who died were known to have been infected before they entered the clinic. Of the forty four others ten had an autogenous infection from an extragenital focus. In the thirty four cases of hospital infection there was a mortality of 0.15 per cent and in twenty of this group of cases a more or less serious operative procedure was necessary for delivery.

HENRICH (G)

**Fobes J. H. and Fraser W. A.** The Treatment of Puerperal Infection. *Hahnemann Month.* 1926, lx, 140.

For cases of puerperal infection the authors advocate the administration of ergot or pituitrin and drainage by elevation of the head of the bed and the semi sitting position of Fowler. Intra uterine douches and manipulations are of no avail because the bacteria are within the tissues and beyond the reach of chemicals or instruments. Efforts must be made to prevent a bacteræmia by limiting the infection and securing a parametric exudate or localizing the pelvic peritonitis.

In parametritis body rest and tissue rest are indicated. If the exudate becomes purulent and an abscess forms the authors incise and drain. In cases of broad ligament abscess the best results have been obtained by opening the abdomen through a Pfannenstiel incision to locate the abscess, making a supplementary incision over the inguinal canal, passing a blunt hemostat through the inguinal ring down between the folds of the broad ligament to the abscess, sewing a rubber tube in place and then closing the Pfannenstiel incision and irrigating daily with Dakin's solution.

Mercurochrome, acriflavine, gentian violet, and milk injections have not proved of value. Infection is arrested most quickly by the development of a hyperleucocytosis. This result is best obtained by the transfusion of normal or immunized whole blood.

In the authors' clinic the transfusion of whole blood is preferred because of its simplicity, its absolute safety and its definite effects in restoring the bulk of the circulating blood, providing oxygen and nourishment for the tissues, stimulating the hematopoietic organs and supplying hemoglobin, erythrocytes and leucocytes.

Blood transfusions should be given early instead of as a last resort. They should also be given frequently, but the quantity of blood transfused at one time should not exceed 300 c cm.

ROLAND S. CRON, M.D.

### NEWBORN

Dickey, L. B. A Study of an Epidemic of Impetigo in Newborn Infants. *Arch. Pediat.*, 1926, xlii, 145.

In eighteen cases of impetigo occurring chiefly in newborn infants in obstetrical nurseries, cultures from the blebs showed streptococcus faecalis, staphylococcus aureus, and staphylococcus albus. The period of incubation is supposed to be less than three days. In some of the cases, the lesions developed in one day. Many solutions and utensils were found contaminated with organisms of the same type. Oils in particular and stock boric acid solution are dangerous, as they are often contaminated and allow free growth of the organisms. Boric acid solution is more dangerous than valuable. Oils should be kept in sterile containers and resterilized after use. Tap water was found infected, probably from nozzles, etc. Soap also may carry the bacteria.

The primary case may have been in an infant in the children's ward nursery. The infection may have been carried to the obstetrical nurseries by internes

staff doctors, nurses, or others. After it was established in the nurseries, it was probably transmitted from patient to patient through the medium of the nurses' hands, solutions, and articles in common use. It is important that both internes and nurses should have had careful training in asepsis before they work in nurseries.

At the outbreak of an epidemic, all of the babies in the ward should be inspected from head to foot. Those showing any signs of the disease should be kept in the original ward, and the remainder who have been exposed should be placed in another room. New arrivals after that date should be kept either with their mothers or in a third room. There must be no possible contact with either infected cases, suspects, or the nurses who have had charge of cases. As members of the exposed group develop the disease, they should be transferred to the original infected nursery. Obstetrical wards where babies are brought to nurse should be guarded from contamination. There should be prompt isolation of all other infections, especially frank pus cases.

In the treatment, bichloride of mercury and alcohol baths are of value, but not sufficient in themselves. Opening and cauterization of the blebs with silver nitrate and the use of the ordinary antiseptic solutions is satisfactory.

GOODRICH C. SCHAUFFLER, M.D.

# GENITO-URINARY SURGERY

## ADRENAL, KIDNEY, AND URETER

**Chute A L** A Study of Some Cases of Hypernephroma *Boston M & S J* 1926 cxciv 471

Chute reports the results obtained in forty three cases of hypernephroma thirty one of which were operated upon by him and six by other surgeons Six were not operated upon All of the patients who were not operated upon died and five of those treated surgically died of shock In five cases only an exploration was done removal of the kidney being contra indicated because metastases were present or the organ was fixed Ten patients subjected to operation were living from two to nineteen years later

The chief symptoms of hypernephroma are hæmaturia pain and a mass in one loin Hæmaturia was present in thirty three of the cases operated upon pain in twenty seven and a mass in twenty seven The hæmaturia may be painless and very scanty Slight pain may be caused by distention of the capsule and more acute pain by hæmorrhage with distention of the pelvis

An early diagnosis is most important The patient must be examined at the time of the bleeding The findings of an examination made during the quiet period are not conclusive The X ray examination must include the kidney outline An irregular contour bulging at the center and a knob at one pole are suggestive The pyelogram usually shows an abnormal pelvis As the majority of the forty three cases reported by the author were examined late the mortality was high

Chute exposes the kidney through an anterior incision through the outer border of the rectus This permits exploration of the peritoneal cavity for metastases gives more room at the pedicle than the usual incision and facilitates the recognition of anomalous vessels Drainage may be established through the loin or through the abdominal wound

CLAUDE D PICKRELL M D

**Cirillo G** Bacteriological Studies of Cases of Perirenal Suppuration (Recherches bactériologiques sur quelques cas de suppuration périrénale) *J d urol méd et chir* 1925 xx 462

From a bacteriological study of five cases of acute suppurative perinephritis the author concludes that as a rule this condition is caused by bacteria whose usual habitat is the intestine but that like appendicitis it may be caused by different species of bacteria sometimes alone and sometimes associated with other species In the majority of cases the infection is polymicrobial Anaerobes play an important part Among the bacillus perfringens and the micrococcus fortidus are the most important probably because in comparison with other species they

are capable of adapting themselves more readily to the new conditions in the perirenal tissues

AUDREY G MORGAN M D

**Mercier O** The Pathogenesis and Treatment of Slight Idiopathic Hydronephrosis (A propos de la pathogénie et du traitement des petites hydronephroses dites sans cause apparente) *J d urol méd et chir* 1925 xi 467

The author reports twelve cases of idiopathic hydronephrosis and includes in his article three roentgenograms The great majority of such hydronephroses are caused by adhesive bands producing fixation of the renal pelvis and the juxtapelvic part of the ureter and associated with slight ptosis of the kidney For some unknown reason the position of the kidney is lowered 1 or 2 cm The part of the ureter nearest the pelvis being fixed by the bands the pelvis becomes either horizontal or oblique from within outward and from above downward and its outlet is upward Because of this abnormal position the force of the contractions must be increased for normal emptying This effort finally decreases the contractile capacity of the kidney so that the urine tends to accumulate in the depression

Surgical treatment should be conservative Nephrectomy is contra indicated because there is only slight distention of the pelvis the function of the kidney parenchyma is intact and the condition is frequently bilateral Pyeloplasty and anastomosis between the ureter and pelvis are not very effective To relieve the intense pain that is often present Papin has proposed resection of the nerve tracts supplying the kidney Complete section of the nerves will stop the pain but is a delicate operation involving danger to the blood vessels if there are pelvic adhesions and as yet has not been performed for a sufficiently long period of time for its effects on the kidney and pelvis to be known In animals it seems to cause atony of the pelvis On the other hand high nephropexy with liberation of the ureter is simple and effective and a logical operation since it establishes a normal position of the pelvis with relation to the ureter

In all of the cases reported by Mercier recovery was complete and permanent

AUDREY G MORGAN M D

**Laquière M** Serous Cysts of the Kidney and Conservative Operation (Kystes séreux du rein et opérations conservatrices) *J de chir* 1925 xxvi 257

The author gives the histories of five cases of cysts of the kidney This is a rare condition as only 119 other cases have been reported in the literature Brief notes of the other cases are given

Serous cysts of the kidney have no pathognomonic signs and are generally first diagnosed at operation. The pain varies in type and has no special characteristics which differentiate it from the pain of conditions such as nephritic, hepatic, and gastric colic, appendicitis and salpingitis. If a tumor is palpated, it may be in various situations if the kidney is mobile, and even if it is at the normal site of the kidney its nature cannot be determined. The urine is generally normal.

The usual treatment has been resection but in the author's opinion this operation is contra indicated as the parenchyma is generally normal. It should be done only when the kidney is diseased. For all other cases the best operation is collar resection. This is an easy operation with no mortality, while the mortality of nephrectomy is about 30 per cent.

Collar resection consists in puncturing the cyst and aspirating the liquid, opening the cyst, and making a circular section in its wall along the line where it emerges from the parenchyma of the organ. In this way a collar of the cyst is removed and the part which is intimately connected with the kidney parenchyma is left. It lines the depression where the cyst was lodged. No attempt should be made to remove it, at most, it should be curetted and cauterized. Some surgeons dislike to leave a part of the cyst, but there is not the slightest danger in doing so as the cysts never recur or degenerate.

AUDREY G. MORGAN, M.D.

**Condamin** Variation of the Results of Nephrectomy for Unilateral Tuberculosis by Tuberculous Lesions Outside the Kidneys (Des tares aporifiques aux résultats de la néphrectomie pour tuberculose unilatérale par des localisations tuberculeuses extra rénales) *J. d'urologie méd. et chir.*, 1926, XXI, 31.

The mortality from tuberculosis of the kidney is still high if the late results are considered. The high late mortality is generally explained by the development of a tuberculous lesion that was already present at the time of the operation. This is suggested by the fact that the figure diminishes with the lapse of time after the operation, being 31 per cent at the end of three years and 14 per cent at the end of seven years.

The author has collected 172 cases of unilateral tuberculosis in which nephrectomy resulted in a permanent cure in 69 per cent. These were cases with no extrarenal lesion. In a group of fifty three cases with extrarenal lesions, complete recovery resulted in only 47 per cent. Bone lesions have the least effect on the mortality of nephrectomy. In eighteen cases with bone lesions, a complete recovery resulted in 62 per cent; in twelve cases with genital lesions it was obtained in 59 per cent; and in twenty one cases with pulmonary lesions it resulted in 20 per cent. Therefore while genital tuberculosis has a marked effect on the late results of nephrectomy, the lesion most to be feared is a pulmonary lesion.

There are a few cases in which nephrectomy seems to benefit the pulmonary lesion, but these are rare.

Cases of renal tuberculosis may be divided into three groups. In the first group are those in which there was no lung complication before operation and in 4 or 5 per cent of which pulmonary disease develops afterward.

In the second group are those in which a few discrete lesions have been present but have disappeared or remained latent for a long time, and pulmonary tuberculosis develops after the operation in from 10 to 15 per cent.

In the third group are cases in which there is manifest tuberculosis at the time of operation and the decision as to operation is difficult. If the pulmonary lesions are clearly progressive with fever, night sweats, etc., operation should not be considered. If operation is performed because of intense pain from cystitis or the danger that a large suppurating kidney may break down, pulmonary tuberculosis of the lungs or meninges may develop. If the lesions are quiescent and not very extensive at the time of operation or if they are localized in one lung and caseation has not begun, operation may be performed if there are reasons for it such as those mentioned, but in such cases the mortality is between 40 and 50 per cent. In the third group of cases operation should be performed only if it is urgently indicated.

AUDREY G. MORGAN, M.D.

**Commence and Pasteau** Deaths from Nephrectomy for Tuberculosis Based on the Constant (Morts par néphrectomie pour tuberculose sur la constante) *J. d'urologie méd. et chir.*, 1925, XX, 492.

Commence reports three cases of early death after nephrectomy for renal tuberculosis. His statistics cover sixty two cases of primary nephrectomy for renal tuberculosis performed by the lumbar route with nine deaths from one to nine days after the operation. Except for one death from embolism on the twenty third day that of a woman in very poor condition these were the only cases of very early death. Three deaths in four (75 per cent) were due to uræmia. This percentage is almost the same as that of Legueu and Chevassu for operative deaths and that of Israel and Boeckel for late deaths. As Rafin wrote in the "Encyclopedia of Urology," urinary insufficiency and anuria to which Pousson in 1900, attributed 41 per cent of the deaths, hardly enter into recent statistics at all.

The question as to whether the uræmia could have been prevented is discussed. It is possible that it might have been in Case 1 in which it was latent and the azotæmia and the constant had been lowered only by a very strict diet. Operation is very uncertain in such cases as the uræmia may recur on the slightest provocation but in Case 1 Commence was surprised at the rapidity of its development.

Its evolution in Case 2 he could not understand. Before the operation the azotæmia in this case was 0.53 and the constant 0.100. The left kidney increased its urea concentration to 24.5 and yielded 1.47 gm. in two hours. Although the water function was excellent, the patient died at the end of fifty hours.

In Case 3 there was some uncertainty as to whether the urine labeled from the left kidney came from the left kidney or from the bladder but the azotæmia was 0.20 and the constant 0.068. This was incompatible with a bilateral lesion and all of the clinical signs indicated a lesion on the right side. Nevertheless nephrectomy performed on the indications given by the constant was followed by death.

The constant has rendered Commenge great service in more than ninety nephrectomies but he calls attention to the fact that the surgeon and urologist should be on their guard against drawing incorrect conclusions in the cases of patients subjected previously to a low nitrogen diet.

AUDREY G. MORGAN M.D.

**Ibuka K. Function of the Autogenous Kidney Transplant** *Am J U Sc 1926 cliv 407*

**Ibuka K. Function of the Homogenous Kidney Transplant** *Am J U Sc 1926 cliv 420*

From the results of extensive animal experimentation the author concludes that the successful autogenous kidney transplant in the neck of the dog functions for months in a practically normal manner while coexisting with the normal kidney in the abdomen and maintains the animal in good health for a fairly long time after the excision of the other kidney.

When a kidney is transplanted to the neck it can there be studied with regard to certain renal functions as well as with regard to its own physiological activity. Analysis of the urine from the transplant and various functional tests made simultaneously with an investigation of the normal kidney in the abdomen or after the removal of the latter showed fairly normal kidney function. After ablation of the other kidney an apparently compensatory activity of the transplant was observed. It is evident that the nerve supply to the kidney and the ureter plays a minor and unessential part in renal function since the transplanted kidney functioned equally well in the new location and the renal pelvis and ureter even showed increased peristalsis. The ultimate failure of function of autogenous kidney transplants transplanted successfully to the neck and functioning there for a fairly long time seems to be caused by hydronephrosis and infection due mainly to mechanical insult in the new location.

Having established a given technique in his work on autogenous kidney transplants the author experimented also with homogenous transplantation. The surgical technique and postoperative treatment were the same as in the previous experiments. The function of the homogenous transplants in the neck in association with the kidneys of the recipient was observed. This was found to continue for a few days after the transplantation and to end in necrosis or softening of the transplant. Chemical and functional tests proved that the homogenous transplant functioned similarly to the autogenous transplant for a limited time but its function soon changed and finally ceased whereas the autogenous transplant re-

covered and assumed normal function at a time corresponding to that at which the homogenous transplant failed. Study of specimens of the homogenous transplant revealed that the transplanted kidneys were affected at first by nephritic changes of the parenchyma such as cloudy swelling and degeneration of the tubular elements and then by marked nephritic processes in the renal tissue showing profound degeneration of glomerular and tubular elements with extensive interstitial infiltration of leucocytes and small round cells.

The great difference in the length of survival and the functional behavior of the homogenous transplant as compared with the autogenous transplant in experiments performed in the same manner cannot be attributed simply to the surgical and mechanical factors of the operation. In the author's opinion it is due probably to some as yet not understood underlying biological factor in homogenous transplantation.

JOHN G. CHEETHAM M.D.

**Papin M. Anuria for Seven Days After Catheterization of the Ureters** (Anurie sécrétoire de sept jours après un cathétérisme des uretères) *J d urol méd et chir 1925 xv 503*

In the case of a man 38 years of age a diagnosis of tuberculosis of the left kidney was made and the ureters were catheterized on June 29, 1925. The catheterization confirmed the diagnosis. The amount of urine collected during a period of two hours was normal but on withdrawal of the catheters urination stopped and in spite of medical treatment no urine was passed for a week. Signs of uræmia were noted but just as the author was preparing to perform a nephrostomy the patient passed 200 gm of urine and thereafter he urinated normally. On July 13 Ambard's constant was 0.109. On July 16 pyonephrosis of the left kidney developed suddenly and on July 20 Papin was obliged to perform a nephrectomy. The patient recovered and is now well.

In discussing this report CHIVASSU said that he has long contended that catheterization may irritate the ureters and kidney and considerably impair kidney function and that although it is valuable and necessary in some cases it should be performed only on strict indications.

PASTEAU and MICHON reported that they had never seen anuria following catheterization of the ureters. Michon stated that the patient should be kept in bed after the procedure and that if he had been treating Papin's case he would have tried another catheterization and lavage of the kidney pelvis to overcome the anuria. AUDREY G. MORGAN M.D.

**Bohringer K. Ureteral Stone Non Operative Instrumental Removal** (Ueber Uretersteine un blutige instrumentelle Entfernung.) *J rheinl d dtsch Gesellsch f Urol 1925 p 91*

When a ureteral stone is not too large its removal or expulsion should be effected if possible through the natural pathway. As operation is not infrequently followed by recurrence or scar stricture

causing the development of hydronephrosis every effort should be made to avoid it.

In fifteen of thirty-two cases of ureteral stone seen at the Dresden Johannstadt Municipal Hospital the stone was removed by the natural passage. In twelve an operation was performed and in eight the procedure has not yet been decided upon.

In seventeen cases from one to three catheters were introduced simultaneously to stretch the ureter, catch the stone between the catheters and pull it out. In five cases this procedure resulted in the immediate removal of the stone and in three by its spontaneous descent several hours later. In nine cases operation was necessary.

Since the very strong contraction of the ureteral wall around and in front of the stone constitutes the chief obstacle to the descent of the stone, the author has devised a special dilating instrument. This consists in a 5-cm. director to be slipped past the stone and a dilator with four steel bands which can be dilated into a basket of about 30 Charnier circumference. The author has used the instrument twice up to the present time, once with immediate success and once with an uncertain result.

Since the conservative management requires great patience on the part of the patient, it has been found necessary to operate more frequently than the author desired. HOFFMANN (Z)

**Floris M.** Obliteration of the Ureter in Gynecological Practice and the Resulting Hydronephrosis (Sull'oblitterazione dell'uretere in rapporto alla pratica ginecologica e sull'idronefrosi consecutiva). *Riv. ital. di ginec.* 1935, 11, 35.

The ureter is frequently injured in gynecological practice, particularly in Wertheim's panhysterectomy for cancer of the cervix. The author reviews the various methods of repair and concludes that the best method is implantation of the ureter into the bladder. This is possible however only when the ureter is sectioned close enough to the bladder so that the proximal segment can be implanted without too much stretching.

The next best method and one which is always practicable and quick is closure of the ureter. While this causes hydronephrosis and has been compared in its effect to nephrectomy, it brings about slowly and by a purely functional mechanism the result which nephrectomy accomplishes anatomically and at once and the effects on the organism of low suppression of function of an organ are by no means the same as those of its sudden removal. Nephrectomy is absolutely contra indicated unless the other kidney is normal and when a ureter is injured in the course of a gynecological operation the surgeon may not know whether the other kidney is intact or not.

If the other kidney is diseased ligation of the ureter does not subject the patient to the same danger as nephrectomy. In fact it is known that renal function when suppressed by a hydronephrosis may be re-established even in excess when the stagnated urine begins to flow again. The development of a

permanent and irremediable injury of the kidney requires some time. When the lesion of the epithelium is not too far advanced there may be regeneration of the tubules. In experimental work the epithelium of the uriniferous tubules presented no signs of degeneration a month after ligation, at most they showed simple atrophy from compression.

Various methods of occlusion may be used if they are practiced with due caution. The author prefers tying the ureter with a band of tendon or peritoneum from the lumbar region with ptenization of the stump to prevent adhesions. It is evident however that the method must be adapted to the condition in the given case. AUDREY G. MORGAN, M.D.

## BLADDER URETHRA, AND PENIS

**Rejsek J.** An Unusual Case of Rupture of the Bladder During Cystoradiography (Un cas rare de rupture de la vessie au cours de cystoradiographie). *J. diurol. med. et chir.* 1935, 11, 382.

Rupture of the bladder is generally caused by external violence sustained when the bladder is full but when there is a pathological change in the bladder walls it may occur from internal pressure. Rejsek reports a case of the latter type in a 68-year old man with symptoms of intense cystitis. Cystoscopy performed because a calculus was suspected showed that the capacity of the bladder was only 120 c. cm. and revealed hypertrophy of the trabeculae and intense acute inflammation of the mucous membrane. As no cause for the cystitis was found a roentgenogram was made after the injection of 120 c. cm. of 30 per cent sodium bromide and 2 per cent alvin. The patient immediately experienced intense burning pain and a desire to urinate.

The roentgenogram showed the bladder surmounted by a crescent-shaped shadow, the concave side of which was connected by a pedicle with the bladder shadow. The lower concave surface was jagged while the upper convex outline was smooth. This shadow was due evidently to the perivesical subperitoneal extravasation of the contrast fluid.

The patient refused operation but the next day his condition was much less favorable and only 70 c. cm. of urine could be obtained on catheterization. This finding and the signs of peritonitis and dullness on percussion in the hypogastrium showed that a continuous extravasation of urine was taking place into the subperitoneal space. A suprapubic incision was therefore made and the urine sponged out. There was no hemorrhage. The opening in the bladder wall could not be found. A Freyer tube was placed in the bladder and the perivesical space and the space of Retzius were drained. Partial suture of the aponeurosis and skin was then done. The patient recovered but died soon afterward of pneumonia.

Undoubtedly in such cases there is a pathological change in the bladder wall. Even slight overdistention on injection leads to contraction of the hypertrophied muscle and violent contractions cause an increase in the intravesical pressure and rupture of



the bladder as the result of the decrease in the elasticity of the wall. The roentgen picture in the author's case was interesting as the convex line of the crescent showed that the effusion of liquid was extraperitoneal. If the rupture had been intraperitoneal the effusion would have been diffuse and scarcely visible because of the small amount of fluid. In such a case it is not necessary to lose time looking for the opening in the bladder wall. Suprapubic cystostomy is sufficient. AUDREY G. MORGAN, M.D.

**Bazy P.** Absence of a Shadow in Roentgenography for Vesical Calculi (Note sur l'absence d'ombre à la radiographie dans les calculs de la vessie). *J. d'Urol. Méd. et Chir.* 1925, xx, 369.

In his operative notes for November 22, 1899, the author finds a note in regard to a case in which a lithotripter was introduced and a roentgenogram then taken. A stone was suggested rather than seen clearly between the blades of the lithotripter. As it is often difficult to see the shadow of a vesical calculus, Bazy conceived the idea of studying the shadow seen between the blades of the lithotripter in such cases and applying the knowledge thus gained to other cases of possible vesical calculus.

He describes three cases in which roentgenograms were taken by competent roentgenologists and pronounced negative for stone in the bladder, but in which he could make out a very faint shadow and his diagnosis of stone was confirmed by operation. In one case the shadow he saw was the same in size as the distance between the blades of the lithotripter when it was introduced. Bazy admits, however, that he may have seen these shadows because he was convinced beforehand of the presence of a stone in the bladder. AUDREY G. MORGAN, M.D.

**Wallace W. J.** Unusual Bladder Obstruction. *J. Urol.* 1926, xv, 325.

The author reviews the literature on obstruction of the neck of the bladder and reports an unusual case.

His patient was a laborer 64 years of age, the father of four grown children. He was admitted to the hospital complaining of frequency of urination, strangury and partial incontinence. His history was negative except that he stated that he had had some difficulty with urination all his life. During the last year the symptoms he complained of at the time of his admittance to the hospital had become steadily more severe. On account of his age and the nature of his symptoms he was prepared for a two-stage prostatectomy.

The cystotomy was done under local anesthesia. When the second stage of the operation was undertaken three weeks later, no intravesical bulging or enlargement was found. Instead there was what appeared to be the wall of a ruptured cyst which was believed to have been broken during the operation. The bladder was closed in the usual manner, but when healing was complete the difficulty in urination returned. Sounds were passed into the bladder

readily, but catheterization of the bladder was frequently necessary.

Cystoscopic examination at this time was unsatisfactory. It was necessary to depress the ocular end of the cystoscope in order to throw the light over the prominence causing the obstruction. A small mass was made out in relation to the left ureteral orifice. As profuse bleeding occurred during the cystoscopic examination, a tentative diagnosis of multiple small vesical tumors was made and open exploration of the bladder was recommended.

Operation revealed no tumor but instead a thin fibrous partition or diaphragm extending along the interureteral ridge. This was a firm thin membrane about 1 in. in height, extending from a point about  $\frac{3}{8}$  in. to the left of the internal sphincter backward just behind the left ureteral orifice and across on the interureteral ridge and terminating just short of the right ureteral orifice. This diaphragm divided the bladder into two portions each of which was capable of holding a considerable amount of urine. When the patient strained the partition came forward and practically occluded the internal urethral orifice. The septum was grasped with forceps and removed with the electric cautery. The patient made an uneventful recovery and since the operation has had no urinary difficulty at all.

The author has been unable to find any similar case reported in the literature. The condition differs from the hourglass bladder and the double bladder into each half of which a ureter empties.

CLAUDE D. HOLMES, M.D.

**Scheele K.** Granular Cystitis, Nodular and Cystic (Die Cystitis granulans, nodularis und cystica). *Verhandl. d. deutsch. Gesellsch. f. Urol.* 1925, p. 255.

The author discusses disease of the urinary bladder which is not tuberculous but forms nodules very similar to tubercles. The cystoscopic picture shows numerous nodules which may occur singly in the region of the trigone and ureters or are found closely pressed together or in groups scattered over the entire surface of the bladder. The mucosa in the immediate vicinity is often slightly reddened, a finding which may lead to confusion of the condition with tuberculosis. Beyond this reddened area, however, there is no macroscopic evidence of inflammation. Some of the nodules are grayish brown and transparent, others which are lighter colored and sometimes larger have a watery transparent content.

The nodules vary in their elevation, sometimes scarcely reaching above the level of the mucous membrane and sometimes being distinctly hemispherical. Occasionally the mucous membrane of the bladder, particularly in the trigone, shows a change toward smoothness so that the markings of the blood vessels are entirely lost and the membrane has an opaque grayish white appearance. The edges of this smooth area show reddening, marked injection of the blood vessels and not rarely a few nodules.

The author has named this syndrome cystitis granularis. He has found it most frequently asso-

crated with a chronic cystitis which often had existed, with remissions, for ten years or longer and had been caused by gonorrhoea or a strong genital discharge or had developed as an obstetrical complication. In any event there had been formerly a severe infection of the bladder, but at the time of the granular cystitis this was no longer present in an acute stage. The patient complained of itching and stabbing pain in the bladder, tenesmus pain at the time of urination, and urgency of urination. In spite of this the urine was usually clear or only faintly cloudy.

Bacteriological examination revealed staphylococci or streptococci in fourteen of thirty three cases bacillus coli in eleven, and a mixed infection of bacillus coli and cocci in two. The histological appearance of excised nodules justifies the classification of the cases into those of cystitis nodularis and those of cystitis epithelialis. Cystitis epithelialis may be further divided into the so called "epithelial nest of von Brunn" cysts, glandular structures and leucoplakia. The conception of the pathologist that the infection and inflammation play an important role in the production of the lymph nodules as well as the epithelial nodules and cysts coincides with the author's clinical experience. In addition to inflammation of the bladder, chronic pus infections of the pelvis of the kidney and purulent infections of the genitalia play important roles. ROSENBERG (Z)

### GENITAL ORGANS

Shaw, E. C. Epidural Anaesthesia for Perineal Prostatectomy. An Experimental and Clinical Study with a Report of 100 Consecutive Cases. *J Urol* 1926, xv, 219

The anatomical arrangement of the nerves supplying the prostate and contiguous structures is such that all may be blocked by a single injection of anæsthetizing solution through the sacral hiatus into the extradural space. Anaesthesia produced by such an injection has been termed by different surgeons epidural, 'extradural,' 'caudal,' and 'sacral' anaesthesia.

In the author's cases transsacral injections and local infiltration were not used.

Morphine was given alone as a preliminary sedative in seventy three cases and in combination with scopolamine in thirteen cases. Nine of the patients received no preliminary sedative. The injections were made with the patient in the ventral position. In ninety cases the anæsthetic was procaine, and in ten, novocain suprarenal. Blood pressure determinations and pulse and respiration counts were made at five minute intervals from the time of the injection of the anæsthetic until the operation was completed. The blood pressure proved to be the best indicator of the patient's condition.

It was found that from 15 to 20 c cm of the anæsthetic completely filled the extradural space in the sacral canal and yet did not extend upward to come into contact with nerves supplying areas not involved in the operation.

Among the 100 cases the anaesthesia was incomplete in 17 per cent. Whenever there was definite pain the induction of anaesthesia was classified as a failure even if the operation could be completed without the use of a general anæsthetic. General anaesthesia was induced in eleven cases.

The incidence of satisfactory anaesthesia was proportional not to the amount of procaine solution used but to the concentration of the solution. The best results were obtained with from 15 to 20 c cm of 3 per cent procaine.

Extradural anaesthesia produces complete relaxation of the muscles of the perineum, thereby facilitating the operation. The postoperative complications are definitely less than those following any type of general anaesthesia. Postoperative pneumonia and uræmia did not occur. Cardiac decompensation occurred in only one case and in this instance it was mild and was followed by complete recovery.

Epidural anaesthesia should not be used for nervous unco-operative patients unless general anaesthesia is definitely contra-indicated. In the cases of old debilitated patients with impaired kidney function, extradural anaesthesia undoubtedly reduces the operative risk. The extradural block need not be supplemented by transsacral injection.

C TRAVERS STEPIA, M D

Keyes, E. L. An Operation for Incontinence of Urine Following Perineal Prostatectomy. *Surg, Gynec & Obst* 1926, xlii, 423

Keyes reports a case of incontinence following perineal prostatectomy one year previously. The patient was a man 70 years of age. On October 16, 1923, the perineum was opened through the usual V shaped incision made in the line of the old scar and the rectum was separated from the urethra. The membranous urethra was opened by mistake but was sutured immediately. As no fibers of the external urethral sphincter could be found, the two levator ani muscles were sutured to the posterior part of the bulbocavernosus.

Seven weeks after the operation the patient remained dry all night. When he left the hospital on January 14, 1924 he was dry at night but was unable to control his urine by day except when he was sitting down. Eleven months after the operation he was obliged to empty his bladder twice at night but was able to hold the urine half a day. In June, 1925 he reported that he was entirely well, was not obliged to urinate at night, and remained perfectly dry.

ALTON OCHSNER, M D

Gayet, G. and Peycelon, R. Pyelonephritis After Prostatectomy (La pyélonéphrite chez les prostatéctomisés). *J d urol méd et chir*, 1925, xx, 371

Ascending infection of the ureters and pelvis in prostatitis is common but little attention has been paid to the course of the lesions after radical operation and the effect of prostatectomy upon their evolution.

The authors report five cases which show that pyelonephritis is not overcome by prostatectomy and after the operation constitutes a danger against which precautions must be taken. In the majority of cases the pyelonephritis which becomes manifest after a prostatectomy is a continuation of a pyelonephritis that existed before but there are cases in which it develops after operation in patients who had clear urine before. Of course renal disease preceding prostatectomy also predisposes to this complication.

Pyelonephritis generally develops the third week after prostatectomy and begins when the hypogastric fistula is closed. There is often a slight rise in the temperature at this time. The free drainage of the bladder through the suprapubic fistula is replaced by less perfect drainage through the retention catheter and the slightest obstruction of the sound with reflux of urine causes an ascending infection.

Pyelonephritis after prostatectomy may be acute or chronic. The prognosis is rather grave. The diagnosis is easy. To prevent the development of the condition special care must be taken when the suprapubic fistula is closed. Vesical lavage should be practiced twice a day, a low pressure being used in order not to cause a reflux into the ureter. Traumatism and infection of the urethra must be avoided. A sound must not be introduced through the penis too soon and after its introduction care must be taken to see that it functions perfectly. If the fever and pyuria persist suprapubic drainage should be re-established. The best treatment for established pyelonephritis is the intravenous injection of urotropine combined with lavage of the pelvis with 1 per cent protargol. If the kidney increases in size and there is retention of pus, nephrotomy may be necessary. In serious cases this operation must not be too long delayed.

AUDREY C. MORGAN, M.D.

# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

Harbin M Non Suppurative Osteomyelitis with  
the Report of an Unusual Case *J Bone &  
Joint Surg* 1926 viii 401

In the case reported that of a boy 14 years of age non suppurative sclerosing osteomyelitis of the os calcis followed trauma sustained a year previously when the patient stepped on a rusty nail Weight bearing was very painful There was no redness or suppuration The affected heel was broader than its mate and moderately tender Its surface temperature was slightly increased Roentgenograms showed destruction throughout the epiphyseal portion of the affected heel, with increased density of the body and proliferation on the lateral aspect

Operation revealed increased vascularity with slight irregularity, an increase in the size of the bone thickening and eburnation of the cortex and a decrease in the cancellous bone There was no evidence of suppuration The condition seemed to have some relationship to epiphysitis or osteochondritis

DANIEL H LEVINTHAL M D

Codman E A Registry of Bone Sarcoma I  
Twenty Five Criteria for Establishing the Diagnosis of Osteogenic Sarcoma II Thirteen Registered Cases of Five-Year Cures Analyzed According to These Criteria *Surg Gynec & Obst* 19 6 xlii, 381

One of the primary objects of the registry for bone sarcoma is the collection of cases of osteogenic sarcoma which have been cured for five years without recurrence and the recording of the methods of treatment in such cured cases

In a period of five years there have been collected only seventeen primary malignant bone tumors which may be considered cured

Through the efforts of the Registry there is now a collection of 100 standard benign giant cell tumors 100 standard osteogenic sarcomata of the femur 100 osteogenic sarcomata of other bones and 50 standard cases of Ewing's tumor In all, 650 cases have been studied

In the seventeen cured cases of primary malignant bone tumor an amputation was done in all but one In the one exception local exploration was followed by intense irradiation and the use of Coley's serum In eight cases irradiation treatment was given In seven the treatment consisted of amputation alone

In nearly all cases of osteogenic sarcoma pain precedes the other symptom Pathological fracture is rare whereas in cases of cysts giant cell tumors and carcinoma it is common A history extending over a period of years is unusual Most patients seek

advice from one to twelve months after the onset of the condition

The general health just before the onset is good With the exception of cases in which the osteogenic sarcoma was coincident with Paget's disease there is no record of such a sarcoma in a patient over 50 years of age The growth of the tumor is rapid and steady being noticeable from month to month

In the examination the soft tissues are not easily moved over the bony tumor About one half of all osteogenic sarcomata occur in the femur and one fourth in the tibia The phalanges carpal, and small tarsal bones seem to be exempt Signs of inflammation are absent or very mild The neighboring joint is not involved The tumor is usually large, and involves both sides of the cortex

In the X ray picture medullary or subperiosteal involvement is seen The old shaft remains in its normal position even if it is disintegrated, and is never expanded The advancing outline of the tumor in spongy bone is irregular and rough The process is both osteolytic and osteoblastic The soft parts near the bony site of the tumor are usually invaded

On microscopic examination mitotic figures are found to be numerous and hyperchromatism of nuclei and pleomorphism are prominent Tumor giant cells and foreign body giant cells are often present, but their absence does not rule out malignancy The differentiation between cellular and intercellular substance is not sharp If complete differentiation is found the tumor is probably benign Definite blood vessels with walls and branches like the twigs of a tree are characteristic of osteogenic sarcoma whereas in benign giant cell tumors there are only capillaries or sinuses without any walls except the endothelium lining them

As a rule the pathologist, roentgenologist, and surgeon agree in their independent diagnoses if the tumor is definitely malignant If one of them is in doubt all of the others are also in doubt or should be Much depends upon the amount of tissue sent to the pathologist and the completeness of the history and other clinical data

Thirteen cases cured without recurrence after five years are tabulated In three the tibia was involved and in ten the femur An amputation was done in all except one In five the amputation alone must be regarded as responsible for the cure

WILLIAM A CLARK, M D

Cole W H Chondrodysplasia *Surg, Gynec & Obst*,  
1926 xlii 359

Ollier who first reported chondrodysplasia, described it as irregular and retarded ossification at the epiphyseal cartilages the cartilage persisting as nodules and masses which take a long time to become

transformed into bone. The condition is observed most clearly in the bones of the fingers and toes. The clinical picture is that of arrested development and growth with curving of the long bones, deformities of the hands and feet, and joint deformities consequent upon the bony changes.

Following a review of the literature, Cole reports a case of his own. The patient was a girl of 12 years whose right leg had been short from birth. None of the other members of her family showed a similar deformity. The patient had had the usual diseases of childhood. Examination revealed enlargements at both ends of the tibia and the lower end of the femur. The knee presented varus angulation, slight flexion and external rotation. The right leg was 20 cm shorter than the left. Roentgenograms showed a short thick femur with enlargement at the mid shaft and at the lower end. In the enlarged portions nothing and irregular vacuoles were evident. The same sort of enlargements were found at each end of the tibia and in the first and second toe bones and their metatarsals.

A biopsy was done on the upper tibial tumor. Grossly the mass was cartilaginous with a thin bony shell. Sections showed cartilage with small bony islands. As no treatment was indicated an extension shoe was prescribed.

In conclusion Cole states that the term Ollier's disease should be confined to cases of cartilaginous dystrophy with or without tumor in which asymmetrical involvement of the body is the outstanding clinical feature. Chondrodysplasia also is usually asymmetrical but as several symmetrical cases are on record the term chondrodysplasia is of broader application than Ollier's disease.

WILLIAM A. CLARK, M.D.

Cumberbatch E. P. and Robinson C. A. Non Infective Arthritis in Women. *Brit M J* 1926 1 612

The authors report investigations carried out from the standpoint that the elucidation of certain obscure conditions may be facilitated by considering the results of treatment. They discovered that the process producing arthritis may sometimes be brought to an end by heating the pelvic organs by diathermy. The local application was first found effective in gonococcal arthritis but later proved beneficial also in other types of arthritis. In the cases of gonococcal infection it was found unnecessary to apply the current to the joints if it was applied to the foci from which the dissemination occurred—the cervix uteri in women and the prostate and seminal vesicles in men. With regard to the other cases it was assumed that the effect of the current upon the arthritis was due to its action upon the cervix or the prostate infected by other organisms. However in one series of cases in which it seemed clear that no infection was present—those of women in whom the arthritis developed at the time of the establishment of menstruation or at about the age of the menopause—the arthritis appeared to

be due to the lack or deficiency of the hormones of the ovary or some other pelvic organ.

In the cases of virgins the diathermy was applied by a rectal electrode and in the cases of married women through the vagina.

Two cases are reported one of arthritis occurring when menstruation began and the other of arthritis at the time of the menopause. In both of these cases diathermy proved beneficial and seemed to aid in the establishment of normal physiological processes.

ROBERT C. LONGERAN, M.D.

Syme W. S. and Cappell D. F. A Case of Chordoma of the Cervical Vertebrae with Involvement of the Pharynx. *J Laryngol & Otol* 1926 21 209

The recognition of tumors derived from notochordal remnants dates from the classical research of Muller, Luschka and Virchow. Muller was able to show that notochordal remnants frequently persist in the sphenoid occipital and sacrococcygeal regions. About fifty six cases have been reported. Such growths occur most frequently in the sphenoid occipital and sacrococcygeal regions.

The authors report the case of a man 59 years old who entered the hospital with a history of shooting pains in the neck of two months duration followed by increasing stiffness and difficulty in swallowing. Breathing and speech were affected.

Physical examination disclosed an extensive smooth swelling in the posterior pharyngeal wall which was more prominent on the left side than the right. At operation the growth was found limited anteriorly and laterally by a capsule. Posteriorly it had invaded the body and adjacent portions of the third cervical vertebra. It was resected as far as possible and a diathermy button applied.

Six months later a recurrence was operated upon. At this time the growth was ill defined and resection was more difficult. The patient died of septic pneumonia.

The first specimen had a curious semi translucent rather gelatinous appearance and was composed of definite strands. The second specimen was similar and no more degenerated. At autopsy no evidence of metastatic growth was found.

The growth was typical of the class of tumor described as chordoma although it was rather more cellular and more malignant than the majority of such growths. The histological appearances were characteristic, and reproduced with considerable fidelity the various stages in the ontogeny of the notochord. There are solid cellular areas composed of clearly demarcated epithelial cells similar to the notochord in its second stage of development. Later the cells begin to become differentiated and exhibit the characteristic mucinous secretion of notochordal cells with here and there the formation of actual physaliphorous cells as the large highly vacuolated structures have been named. In other places secretion is poured freely into the intercellular spaces and the appearance of the notochord at a more advanced

stage is reproduced in an exaggerated degree. Finally, just as when the notochord becomes enclosed in the centers of the intervertebral disks to give rise to the nucleus pulposus, the cells become modified to irregular syncytial strands with many large vacuoles which contain a substance of unknown nature.

The presence of very definite sheaths round the smallest invasive elements of the tumor is a striking example of reversion of the tumor cells to a stage far back, not merely in the ontogeny of the individual but also in the phylogeny of the vertebrates. In the human subject, the notochord does not undergo the more elaborate differentiation which occurs in some of the lower vertebrates and the primary and secondary sheaths are at best only very poorly developed. These sheaths are present in certain lower mammals, e.g. the pig and the mouse, but the greatest development of these structures occurs in exceedingly low vertebrates such as lepidosiren and acanthias.

The tumors thus appear to reproduce in a very interesting fashion the character of notochordal cells both in architectural arrangement and cytological structure.

ROBERT C. LONGERGAN, M.D.

Rollier A. Pott's Disease. *J. Bone & Joint Surg.*, 1926 viii 360

Probably the most famous institution of heliotherapy is that at Leysin, Switzerland, under the direction of Rollier. In this article Rollier reports his observations upon the successful results of heliotherapy in Pott's disease.

In addition to the sun treatment, immobilization in the horizontal position is maintained until a complete cure of the diseased vertebrae is demonstrated by roentgenograms. Ambulatory treatment is not considered. The horizontal position gives the necessary rest to the spinal column and, by removing the harmful influence of the body weight, prevents further ulceration due to compression or deviation of the vertebrae. To obtain the desirable hyperextension of the diseased segment, the patient is immobilized by turn in the dorsal and ventral positions.

In the dorsal position the patient with spondylitis is placed upon a hard mattress if he has well developed musculature and no deformity of the spinal column. If he is in poor condition millet seed cushions of uniform consistency are arranged between his body and the mattress. In the cases of children and restless adults a canvas jacket is applied with straps to keep the patient from turning or sitting up in bed. In cases of gibbus formation the spine is hyperextended and millet seed cushions of gradually increasing thickness are placed underneath the kyphosis. The cushions are later replaced by a block of wood which conforms to the shape of the gibbus.

When the pain has ceased the patient is turned to the ventral position and a wedge shaped cushion is placed under the chest. In some cases the shoulders are supported by a canvas strap fastened to the foot of the bed. In this position the back muscles are

developed by movements. In cases of cervical spondylitis the head is held in a celluloid cup modeled on a plaster cast of the back of the head. This cup is fitted with wheeled supports running freely on rails which eliminate traction and permit any degree of extension.

When the disease involves more than one vertebra the patient is kept in the horizontal position until the X ray shows the formation of a solid cicatricial block with a strong bony structure. This may be obtained in from one to two years. The patient is then gradually permitted to assume the upright position with the aid of a supporting corset. The corset used for men is made of perforated celluloid and that for women of linen re-enforced with steel rods. The author is opposed to plaster corsets.

When the cure is complete the patient is urged to continue the sun baths at home in order to prevent a recurrence of the disease.

ROBERT C. LONGERGAN, M.D.

Berry J. M. A Theory as to the Cause of Perthes' Disease Based on Roentgenological Findings. *J. Bone & Joint Surg.*, 1926 viii, 333

The theories as to the cause of Perthes' disease are narrowed down to three: (1) the infective, (2) the traumatic and (3) the congenital.

Thirteen cases are reported with roentgenograms. The author calls attention to the frequency with which bone changes characteristic of Perthes' disease follow the reduction of congenital dislocation of the hip and speculates as to the relationship between them. He believes the changes are satisfactorily explained by the theory of partially arrested development.

According to the theory of biogenesis, the embryo, in its development, tends to repeat the evolutionary history of its race. The limb structure of human embryos at the end of the second month and the position of the limb in relation to the trunk correspond to that found in adult reptilian development. It is probable, therefore, that partial arrest of growth at the reptilian stage results in an imperfectly formed shallow acetabulum and a small, malformed head of the femur, and that therefore when rotation of the limb takes place to make the erect attitude possible a dislocation of the head of the femur is very apt to occur.

A human hip joint partially arrested in development at the reptilian stage probably has an epiphysis of poor quality. It is easy to believe then that the trauma incident to the reduction of a congenital hip would affect the circulation and would be sufficient to produce the changes of Perthes' disease by causing the epiphyseal tissue to break down. The author reports one case with characteristic X ray evidence of the disease following traumatic dislocation of the hip in a boy of 9 years.

If trauma acting upon defective epiphyseal tissue causes these changes it is logical to expect to find similar changes in defective epiphyseal tissue in other joints. Several such diseases have been ob-

served osteochondritis of the spine tarsal scaphoiditis osteochondritis of the second and third metatarsals and Osgood Schlatter's disease of the tibial tubercle. The author has observed also a case in which the X ray disclosed changes similar to those of Legg Calvé Perthes disease in the epiphysis of the lower end of the radius and another in which it revealed such changes in the scaphoid bone of the wrist. In a third case similar bony changes were found in practically every joint in the body.

ROBERT C. LOFRANCO, M.D.

**Moller P. F.** The Clinical Observations After Healing of Calvé Perthes Disease Compared with the Final Deformities Left by That Disease and the Bearing of Those Final Deformities on the Ultimate Prognosis. *Acta radiol.* 1926 v. 1.

The author has collected seventy-four healed cases of Legg Calvé Perthes disease, thirty-five of which were his own. In fifty-eight cases (78.4 per cent) the functional result was good, the only clinical defect being a very slight dragging of the leg in about one-half of the cases.

In sixteen cases (21.6 per cent) the disease caused considerable restriction of the movement at the hip and a permanent limp. Seven of the patients in this group have been able to go about freely and continue their usual occupations, but the nine others have continual pain in the hip which decreases their ability to work.

The author concludes that the deformities resulting from Legg Calvé Perthes disease favor the development of arthritic deformities. He believes that this is true not only of the severe deformities but also of the so-called perfectly healed lesions and those which remain latent.

## SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC.

**Cotton F. J.** Disinfection of Septic Joints. *J. Bone & Joint Surg.* 1926 viii 395.

Since 1915 the author has advocated incision, irrigation, and suture of septic joints. The technique is as follows:

Through a small incision about  $\frac{1}{2}$  in. long extending into the synovial pouch, a blunt taper-pointed irrigator nozzle (like that of a urethral syringe) is inserted.

Under a head of about 18 inches normal salt solution with 1:15,000 corrosive sublimate is run into the joint until the sac is ballooned, when the tip is withdrawn and the joint emptied. This is repeated for fifteen minutes.

The synovial capsule is then sutured with No. 0 or 1 catgut, which is not exposed within the joint, and the fibrous capsule is sutured with a water-tight lock stitch. The outer wound is left open. An alcohol dressing and a pillow splint are applied. Motion is begun on the tenth day.

A focus of infection within the joint will defeat the disinfection.

DANIEL H. LEVINTHAL, M.D.

**Latreille J.** Resection of the Lower End of the Humerus for a Gunshot Wound. Findings Eight Years After the Operation. (Késection diaphysaire pour traumatisme de guerre, résultat éloigné datant de 8 ans). *Rev. d'orthop.* 1925 xxxii 551.

The patient whose case is reported in this article was a soldier who eight years ago was subjected to subperiosteal resection of the humerus for a gunshot wound of the elbow. A recent examination by Latreille showed a slight prominence of the olecranon process, but all movements were possible. The joint was not abnormally movable. The X ray demonstrated a tendency on the part of the bone to widen in order to form a new epiphysis. It revealed also the new trochlea and the condyle. The new bone was 7 cm. shorter than its fellow on the opposite side.

Latreille calls attention to the frequency and the relative completeness of bone regeneration when such resections are made subperiosteally according to the technique of Olier.

ANTHONY F. SAVA, M.D.

**Lyle H. H. M.** Skin Plastics in the Treatment of Traumatic Lesions of the Hand and Forearm. *Ann. Surg.* 1926 lxxxiii 537.

For the restoration of function following injuries of the hand, prompt healing is essential. Healing can be expedited by the use of suitable skin grafts. Skin plastics may be employed singly in combination in series and as primary and secondary closures. To obtain a primary permanent closure, careful debridement must be done first, and the raw surface immediately covered by a suitable flap. Ideal conditions, such as a good blood supply and asepsis, are necessary. In small defects the Thiersch graft can be used; in large defects where deeper structures are exposed, a pedunculated flap is necessary.

Secondary closure by a Thiersch graft is done in cases of extensive destruction of the skin and cases of burns and ulcerations. The object of the treatment is to sterilize the wound and provide an epithelial covering. It prevents excessive scar formation and decreases the possibility of future contractions.

Skin plastics in series are used when temporary closure is the prime requisite. A Thiersch graft is first applied and later, when the wound is healed, the grafts are removed and a pedunculated flap is substituted.

FRANK G. MURPHY, M.D.

**Mayer L.** Tendon Transplantations for Division of the Extensor Tendon of the Fingers. *J. Bone & Joint Surg.* 1926 viii 383.

Traumatic division of the extensor tendons in which primary suture is contra-indicated by infection or extensive trauma to adjacent tissues can be successfully treated by tendon transplantation performed under suitable operative conditions. Local anesthesia is used. The extensor communis digitorum tendon of the index finger is the most suitable for transplantation purposes.

The distal end of the severed tendon is exposed through a  $1\frac{1}{2}$  in curved incision. The tendon stump is freed from adhesions and grasped with a tendon forceps. A second incision about 3 in long is made over the course of the extensor tendons of the index finger and the extensor communis digitorum tendon to the index finger is severed at the proper level and freed for an adequate distance so that when it is brought to the injured finger it will be as nearly as possible in a straight line. A subcutaneous channel is bored from the first incision toward the wrist in the direction of the extensor communis digitorum tendon. The channel must be sufficiently wide. The paratenon is well preserved. The tendons are spliced by the end to end method or by the buttonhole overlapping method which is more secure.

After the operation the finger is immobilized in the extended position for eight days. The splint is then removed at intervals for gentle active motion. The motions are gradually increased both in range and strength. As a rule the range of motion is about 75 per cent of the normal within four weeks after the operation.

DANIEL H. LEVINTHAL, M.D.

#### Mackinnon A. P. Plaster Shells in the Treatment of Tuberculosis and Fracture of the Spine *Canadian M. Ass. J.* 1926 xvi, 399

Mackinnon reports his experience with the plaster shells which have been used for several years by the Massachusetts General Hospital and the Children's Hospital of Boston. The shells have proved satisfactory after fusion operations on the spine, in cases of recent fracture, and in cases of spinal tuberculosis not operated upon.

They extend from just below the head to the middle of the calf, and are made in two sections—a posterior and an anterior half. When the lesion is in the upper dorsal or cervical spine, the plaster is extended to form a head piece. The patient is first placed on a table in the prone position with pillows and sand bags arranged to give as much correction of the deformity as possible without causing pain. Next a layer of felt is cut and applied to the posterior half of the body in such a way as to conform to its contour closely. This is bandaged in place and, by two men it is covered with a plaster bandage applied both lengthwise and across and is molded closely to the figure.

The shell is reinforced by metal strips between the knees connecting the body and thigh portions and in the case of a head piece between the body and the head. When the plaster has set the bandages holding the felt are cut and the shell with the adhering felt is removed to dry. When the splint is dry, the patient is placed in the posterior shell and an anterior section is made similarly.

Probably the greatest advantage of this splint is that it permits moving the patient without causing discomfort when heliotherapy is to be given or dressings are to be changed following operations upon the back. With the patient in the posterior half, he may be easily turned after the anterior section has been

bandaged to its opponent. The posterior shell may then be removed.

The use of the splint in Pott's disease places the diseased part at rest, relieves it from weight bearing, and either prevents deformity or decreases it through the development of compensatory curves above and below the site of the lesion. It has been found efficacious in the postoperative management of cases in which the fusion operation of Hibbs or Albee has been performed. The author reports one case in which the shell was used with relief of pain and the reestablishment of the normal physiological curves following the manipulation of a recent fracture of the spine.

ROBERT C. LOVERGAN, M.D.

#### Moorhead J. J. Arthroscopy for Knee Joint Calculi *Ann. Surg.* 1916 lxxviii, 397

Cases of loose body in the knee are classed by Moorhead as acute, subacute, and chronic.

Acute cases comprise those of sudden mechanical injury followed by pain, swelling due to effusion, and disability. One attack predisposes to another, and the condition usually passes on to the subacute and chronic stage. In the initial injury the meniscus is probably fractured or partly detached and in subsequent injuries it is separated as a loose body.

In the acute cases examination usually reveals (1) fracture, dislocation of a meniscus, (2) a chip fracture from an articular surface, (3) a subpatellar fat pad, (4) villous synovitis, and (5) hands or adhesions.

The subacute cases present the same pathological conditions and also synovial excrescences, exostoses, and enchondroma.

In the chronic group, a hypertrophic arthritis with irregularities of the joint is found in addition.

In the acute cases the treatment indicated is reduction of locking, aspiration of the joint effusion, and splinting. When the pain subsides the patient may be allowed to walk while still wearing the splint. Overbending or rotation of the knee should be forbidden for several months.

In the subacute cases stimulation of the weakened quadriceps by massage and radiant heat is important. Only rarely is operation indicated in the acute stage.

In the chronic cases it is often necessary to remove a torn cartilage. This is best done by the Jones method with the knee flexed at a right angle. Movement should be insisted upon every two hours, beginning immediately after the operation. After the removal of the sutures on the seventh day, the patient should begin to walk.

When there is doubt as to the exact nature of the condition the incision should be large enough to expose the entire joint surface. Either the vertical split patella (Jones) incision or the mediolateral incision will serve well. The latter is begun in the midline proximal to the patella and brought down to within 1 cm of the upper margin and around the mesial border of the patella to the tibial tubercle. The patella and half of its tendon are then reflected



outward to the side of the condyle. After either of the incisions mentioned the knee must be flexed acutely for good exposure.

A tabular report of forty nine cases is given. Thirty six of the patients were males. The youngest patient was 9 years of age and the oldest 67 years. A lateral arthrotomy was done in twelve cases, a medial arthrotomy in twenty three and a mediolateral arthrotomy in fourteen. In all joint stability and flexibility have been improved and in none has there been any postoperative stiffness.

WILLIAM A. CLARK, M.D.

Ollerenshaw, R. The Surgical Treatment of Dan-  
gle Foot. *Brit. M. J.* 1926, 1, 525.

The author has operated upon nineteen cases of dangle foot by the method described by Campbell. Through an external incision such as that made for astragalectomy, arthrodesis of the midtarsal and subastragaloid joints is effected and the bone chips are trimmed of cartilage and placed in saline solution. In young subjects the entire scaphoid is removed. Through a mid posterior incision the tendon of Achilles is next divided as for Z lengthening and the back of the tibia and the upper surface of the os calcis are exposed. A notch is then cut in the os calcis large enough to receive the broader end of the trimmed scaphoid. After the scaphoid has been placed in position the smaller pieces of bone are grouped above it and fixed in place by suturing the tendon of Achilles. The tendon is lengthened sufficiently to allow a right angled position of the ankle.

A plaster cast is applied for six weeks and at the end of that time is replaced for six months by a posterior iron brace preventing plantar flexion.

DANIEL H. LEVINTHAL, M.D.

## FRACTURES AND DISLOCATIONS

Thomson, J. E. M. Leverage and Levers in the Reduction of Fractures. *Nebraska State M. J.* 1926, 2, 98.

Thomson's technique for the reduction of fractures by leverage is as follows:

With the patient under anesthesia and on a fluoroscopic table, a stab incision is made over the fracture and by means of a blunt lever of  $\frac{1}{4}$  in. round steel the fragments are approximated under the guidance of the fluoroscopic screen. When a good position is

obtained, the lever is held in place and a cast applied around it. The protruding end may be cut off to prevent its being disturbed in the nursing of the patient. After about ten days, when sufficient callus has formed to hold the fragments, a window is cut in the cast and the lever pulled out.

Thomson claims that this procedure is a definite and certain method of reducing fractures and that the introduction of the lever is no more dangerous than the insertion of a large local anesthetic needle or of the chisel for osteotomy.

WILLIAM A. CLARK, M.D.

Ritter, H. H., Lasher, W. W., Wurtzel, G. L., and Goldblatt, D. Fractures About the Elbow Joint. A Review of 150 Cases. End Results in Fifty Two Cases. *J. Am. M. Ass.* 1926, LXXVI, 680.

This article is a review of 150 cases of fractures about the elbow and a report of the end results in fifty two cases.

The fractures were supracondylar in 41 per cent. In 26 per cent they occurred in the internal condyle, in 12 per cent in the external condyle, in 21 per cent in the end of the radius and in 4 per cent in the olecranon. Eighty two per cent of the patients were under 15 years of age. The musculospiral nerve was injured in three cases and the ulnar nerve in eleven.

The authors use the Jones method of reduction as a routine. The elbow is flexed until the radial pulse is obliterated and then released just enough to let the pulse come through. In order to insure restoration of the normal carrying angle, the little finger should be on a sagittal plane with the greater tuberosity of the humerus. Anesthesia is necessary for the reduction unless the case is seen within a few hours after the injury. Flexion is maintained by a figure of 8 bandage. No cast is applied. After two days guarded motion is begun and after ten days the bandage is removed and only a sling is used.

The end results showed normal function and appearance in 86.4 per cent of the fifty two cases traced. Ashurst obtained good results in 81 per cent and Cutler and Cline in 80 per cent.

Four results were due to: (1) the filling up of the coronoid and radial fossae with callus, (2) bone block, (3) failure to maintain the carrying angle, or (4) myositis ossificans.

WILLIAM A. CLARK, M.D.

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD, TRANSFUSION

**Emile Weil and Stieffel** A Case of Marked Hæmophilia in the Course of Lithiasic Icterus, Transfusions, Operation Followed by Recovery (Sur un cas de grande hémophilie au cours d'un ictère lithiasique, transfusions, opération et guérison) *Bull et mém Soc méd d hôp de Par* 19 6 xlii 55

The authors report the case of a 27 year old woman with infectious biliary lithiasis causing a febrile painful and intense jaundice, bleeding from the nose and gums, large ecchymoses on the thighs following subcutaneous injections, and numerous purpuric spots due to scratching. The patient's history and that of her family were negative as regards bleeding. The venous blood was unclotted and the yellow plasma still fluid after three days. The coagulation time was normal (two to four minutes) but the ear prick bled without stopping for one day. As in hæmophilia, the addition of one drop of fresh human serum to the patient's blood *in vitro* caused coagulation. The red cell count was 1,900,000 and the hæmoglobin value was 45 per cent.

Two hours after a 300 ccm transfusion, the blood clotted in fifteen minutes and the retraction of the clot was better. Three days later, the bleeding time was fourteen minutes and the coagulation time one hour and seventeen minutes. Six days later the red blood cells numbered 2,300,000 but the hæmoglobin was still 45 per cent. Nine days later, a second transfusion in which 350 ccm was given, caused a febrile reaction. The next day the bleeding time was four or five minutes.

The marked improvement in the blood lasted for only a few hours after each transfusion, but some permanent benefit resulted as the clotting time ultimately fell from three days to one hour, the red blood cells increased from 1,900,000 to 4,000,000, and the hæmoglobin increased from 45 to 60 per cent.

The infection and the fever gradually decreased. Following a third transfusion, in which 250 ccm was given incision and drainage of the bile passages with the removal of twelve stones from the gall bladder and one large stone from the common duct was done. No hæmorrhage occurred. The patient made a rapid recovery, with the return of the blood to normal. After the operation the bleeding time was six minutes, clotting without retraction occurred in five minutes, the red blood cells numbered 4,800,000, the white blood cells numbered 8,000, and the hæmoglobin increased to 90 per cent. There was abundant drainage of bile. The jaundice cleared up, the stools became normal, and the patient's weight increased.

Although hæmorrhage occurs in acute hepatic insufficiency, the authors had never previously noted

a delay of coagulation for as long as three days except in the experimental hirudin blood of rabbits. The lithiasic icterus and the biliary infection in the case reported caused an acute symptomatic, not a permanent hæmophilia.

In another case, that of a patient with tuberculosis and fatty cirrhosis of the liver, the authors found a coagulation time of twelve hours.

WALTER C BURKET M D

## LYMPH VESSELS AND GLANDS

**Jacobson, J** The Treatment of Tuberculous Lymphadenitis by Cinnamic Benzyl Ether (L'éther benzyl cinnamique dans le traitement des adénites tuberculeuses) *Bull et mém Soc méd d hôp de Par* 1925 xlii 1329

The favorable results obtained with cinnamic benzyl ether in the treatment of tuberculosis of the skin and mucous membranes led the author to use it in fourteen cases of tuberculous lymphadenitis. The technique was the same as that employed for lupus by Darnier (*Comptes rendus de la Société de dermatologie* February 9 1922).

Except in the case of one patient who abandoned treatment after the first series of injections, a cure was obtained in an average of three months. In four cases, puncture or filiform drainage was necessary. The progress of the cure is indicated by a reduction in the periglandular induration. Ultimately the glands soften and discharge or resorption occurs. The final result is a small fibrous nodule.

Cases of varying degrees of severity were treated. In some of them the masses attained the size of a small orange. The patient who abandoned treatment showed considerable improvement after the first series of injections.

The treatment described is suggested as a valuable adjunct to radiotherapy and surgery. It facilitates surgery by reducing the peradenitis and mobilizing the glands. It exerts a favorable influence also on associated lesions wherever located. No general reactions have been observed following its use.

ALBERT F DE GROAT M D

**Rolleston Sir H, Woolbridge G H, Fletcher H M, Pugh L and Others** Hodgkin's Disease in Man and Animals *Proc Roy Soc Med Lond* 1926 xxi Sect Med & Compar Med, 39

**ROLLESTON** The cause of Hodgkin's lympho-granuloma is unknown. The histological picture described by Andrewes and Reed is characteristic. The condition has been regarded as (1) a neoplasm (2) a transitional process between a neoplasm and an inflammatory formation, and (3) an infective granuloma due to an unknown virus.

Lymphadenoma occurs usually first in the cervical glands. It very rarely attacks the lymphoid tissue of the alimentary canal. There is no satisfactory evidence that Hodgkin's disease has ever been transmitted to animals. The differentiation between this condition and endothelioma is difficult. Early tuberculous adenitis without necrosis or caseation may simulate it.

WOOLBRIDGE. Hodgkin's disease is rare in all species of animals except the dog. It appears to be an infective process rather than a neoplasm. The causal organism whatever it is has a low virulence. All lymphatic tissue except that in the bowel is enlarged. The course of the disease seldom exceeds two or three months. The characteristic histological picture in man has not been observed in dogs. There is no satisfactory treatment. The best results are obtained with arsenic and mercury.

FLETCHER. Hodgkin's disease appears to be due to infection perhaps by a spirochete as it is accompanied by fever and responds to arsenic. Irritus

and purpura are occasional skin manifestations. The fever is usually very irregular and occasionally of the relapsing type. The results of X-ray and arsenical treatment are most striking but as yet no permanent cure has been obtained.

PUGH. Hodgkin's disease is most frequently confused with one of the leukæmias, tuberculosis or malignant disease. No case in an animal has resembled the condition in man as described by Andrewes and Keed.

STEWART. Attempts to cause Hodgkin's disease in monkeys have failed. In the later stages the condition resembles a neoplasm. It is difficult to differentiate between Hodgkin's disease and tuberculosis even when the glands are sectioned. The blood changes in lymphadenoma are so slight or so very variable that they are of practically no value in the diagnosis.

THURSFIELD. The disease called lymphadenoma in animals differs from the lymphadenoma occurring in man.

CYRIL J. GLASPEL, M.D.

# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE, POSTOPERATIVE TREATMENT

**Palmer L J** *Surgery in the Presence of Diabetes Mellitus* *Northwest Med* 1926 xvi, 196

The mortality of operations upon patients with diabetes mellitus has been decreased by advances in the chemistry of this disease and in the science of nutrition, better cooperation between surgeons and internists, better surgical technique, the use of less harmful anesthetics, earlier operation, and better hospital facilities.

When the taking of liquids by mouth is prevented for a considerable time by the nature of the operation or by vomiting it may be necessary to give glucose by rectum. When the surgical procedure or diarrhoea prevents the rectal administration of glucose its intravenous administration must be resorted to. When nutrition can be given by mouth liberal amounts of orange juice and oatmeal gruel will usually supply sufficient glucose for buffer purposes.

When it is possible to devote a day or two to the preparation of the diabetic patient for operation glycaemia should be reduced to at least 200 mgm per 100 c cm and the alkali reserve raised to at least fifty volumes per cent. Particularly in the presence of infection and in the cases of elderly patients care must be taken not to restrict the carbohydrate intake to such an extent that the glycogen stores will be depleted. In such cases more insulin should be given to remove ketone bodies, lower the glucose content of the blood, and increase the glycogen reserve. The protein intake should not be less than usual, but the fat intake should be reduced to a very small amount.

Chloroform should never be used. Ether also should be avoided if possible. Nitrous oxide and oxygen alone or combined with local anaesthesia induced by infiltration or preferably by nerve blocking is very satisfactory. Spinal anaesthesia is probably the safest from the standpoint of the diabetes. Ethylene also is entirely satisfactory.

CARL R. STEINKE M D

**Bigger I A** *Hypertonic Sodium Chloride Solution Intravenously in the Treatment of Extensive Superficial Burns* *South M J* 19 6 xiv 30

The salient symptoms associated with superficial burns are explained by the presence of a toxin in the blood. In severe burns concentration of the blood has been demonstrated in some instances and it is probable that such a change occurs in the majority of cases of extensive lesions.

Robertson and Boyd were able to demonstrate primary and secondary proteoses in burned animals.

When certain protein derivatives are injected intravenously, the concentration of the blood is increased. It therefore seems possible that the increased concentration found in severe burns is the result of the absorption of protein decomposition products due to the injury of the tissues.

Cannon considers low blood pressure the important factor in shock and believes that this is the result of a decrease in the blood volume. If this theory is correct a prompt increase in the volume of the blood is of importance.

Hypertonic sodium chloride solution given intravenously increases the blood volume promptly and for a considerable period of time. Therefore the author believes that its use is rational in the treatment of severe burns. It is proposed not as a substitute for debridement or the forcing of fluids, but to prepare the patient for debridement.

CYRIL J. GLASPEL M D

**Smith F A** *Rational Management of Skin Grafts* *Surg, Gynec & Obst*, 1926 xlii 556

The best sources of skin for grafting are the upper arm of the male and the thigh of the female. When soft hairless skin is required the graft should be taken from the inner aspect of the limbs. There is no special advantage in choosing skin from an area of tension such as the deltoid, nor in obtaining it from the prepuce or scrotum.

It is obvious that a graft is parasitic and during the first two or three days after its transplantation it must be maintained by the absorption of tissue juices or lymph. Hence, its intercellular spaces must be open to the circulation of lymph in order that nourishment may be carried to its cellular elements. It must be cut accurately to size, maintained at normal tension accurately fixed by carefully placed sutures and accurately approximated to its base by a proper even pressure. The skin must be free from fat. In the use of various pressures in the application of skin grafts Smith has found that for full thickness grafts a pressure of 30 mm Hg is very satisfactory.

This same care is not vital to the success of split skin grafts. A simple technique consists in smearing the source of the graft with a thin layer of vaseline, which materially facilitates the cutting of the piece, arranging the skin, raw surface outward, on dental impression compound molded to the part to be covered and applying this with a firm bandage without measuring the pressure.

The grafted part should be immobilized for several days. Histological descriptions of contracted skin, skin under normal tension, and skin on the second, fifth, tenth, and twentieth days after grafting are given.

CARL R. STEINKE M D

## ANÆSTHESIA

Meeker W R Recent Developments in the Technique of Regional Anæsthesia *Clin Med* 1926 xxxiii 225

Local anæsthetic procedures may be divided into terminal infiltration field block and nerve block. Field block is especially applicable to the removal of superficial benign tumors and for anæsthesia of the fingers toes and metacarpal and metatarsal bones. Circular field block of the terminal rectum affords satisfactory anæsthesia for hæmorrhoidectomy. Field block is satisfactory also in the repair of the average hernia.

Paravertebral block of the spinal nerves is of great value when it is applied to cervical and sacral nerves. Block of the cervical plexus by the lateral oblique route affords adequate anæsthesia for operations on the neck such as thyroidectomy laryngec-

tomy and the removal of thyroglossal duct cysts and diverticula of the œsophagus.

In block of the sacral nerves a low sacral injection combined with transsacral injection of the lateral foramina affords most constant anæsthesia. By this method the entire pelvic floor and the viscera are anæsthetized so that the Kraske operation perineorrhaphy or perineal prostatectomy may be performed painlessly. With the addition of suprapubic field block resection of the bladder and suprapubic prostatectomy may be done.

Block of the splanchnic nerves does not afford sufficient anæsthesia for the performance of abdominal operations. If for any reason general anæsthesia is not to be employed these operations are best performed with the use of terminal infiltration methods combined with deep preliminary narcosis and followed by very gentle postoperative management.

# PHYSICOCHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Wetterstrand G A Roentgen Therapy in Surgical Tuberculosis *Acta radiol*, 1935, 14, 578

The author gives an account of the experiments he has carried out and the results he has obtained in the roentgen treatment of surgical tuberculosis. He believes that this treatment is of the same value as other procedures now in use provided the proper precautions are taken and has the added advantage that it causes the patient less expense. The best results are given by small doses—about one third the erythema dose, with an upward allowance of from 20 to 50 per cent.

Most of the cases reviewed were cases of tuberculous lymphomata. The stage of the condition has little influence upon the results, but the spreading and fistulous forms require more prolonged treatment than others. Local irritation must be avoided. A recurrence or infection of other glands occurred in 4 per cent of the cases, not dangerous skin changes in 12 per cent and telangiectases in 3 per cent. There was no necrosis.

The treatment proved extremely effective in tuberculous peritonitis without pulmonary or intestinal complications. Of twenty four such cases, fifteen remained cured after from two to five years and temporary improvement was obtained in five.

Tuberculosis of the female genital organs reacts extremely well to roentgen therapy. In the author's opinion roentgen irradiation is the best treatment for such cases. Of ten patients whose condition seemed hopeless when the treatment was begun four are well three have been free from symptoms for two years and two who are still under treatment have been benefited. One cannot be traced. Cases in which operation is performed should be given post operative roentgen irradiation.

The author believes that in the treatment of tuberculosis of the male genital organs too little attention has been paid to roentgen therapy. His nine patients with this condition have been restored to health.

Cases of fistulae after nephrectomy, puncture canals infected with tuberculosis, and secondary foci of the disease in the soft tissues have a good prognosis.

Roentgen irradiation is gaining favor also in the treatment of tuberculosis of the bones and joints.

Bardeen C R. The Biological Effects of Roentgen and Gamma Rays. *Wisconsin M J*, 1936, xxv, 215

Investigations based on radio-activity have led to profound changes in some of the more fundamental theories of physics and chemistry. These are discussed at some length to correlate them as far as possible with the very imperfectly understood biological effects. They arise from the radiant energy

absorbed by the tissues. The roentgen and gamma rays absorbed affect primarily the electrons of various atoms whose period of revolution about the central nucleus corresponds in frequency to the wave frequency of the radiant rays. To these high speed electrons within the tissues are attributed most of the direct biological effects of radiation. They may interfere with the electrostatic tension of the colloid particles of the cell or alter the molecular structure of some of the constituents of the cell.

The part of the cell most susceptible to radiation is the nucleus. Brief mention is made of some of the experimental work by which this fact has been established. In general it has been found that the tissues most sensitive are those which contain a relatively large amount of chromatin, are in active cell division, or have great regenerative power. The cells of a ravaged tissue are unequally affected. Regeneration takes place from the uninjured or less injured cells, the cells at rest at the time of the exposure. Recovery is possible only when the regenerative powers of a tissue equal or exceed the susceptibility to injury, when there is a low injury regeneration ratio. The therapeutic value of the roentgen rays and gamma rays depends upon the fact that pathological tissues may have a higher injury regeneration ratio than normal tissues.

Reference is made to the relative sensitivity of various normal tissues reported by Hirsch and to the relative radio-sensitivity of pathological tissues as given by Ewing. The latency in tissue effects following radiation is commented on, and various direct and indirect factors having a bearing thereon are mentioned. Hirsch's table showing the latency period of pathological tissues is included.

Favorable effects after suitable irradiation may result from direct destruction of tissue cells, or from indirect local or systemic reactions such as lymphocytosis or localized fibrosis. Toxic substances may be produced. If these are not in excess they may stimulate chemical and morphogenic defense reactions which favor normal as opposed to pathological tissues. If in excess they may cause severe constitutional disturbances. ADOLPH HARTUNG, M.D.

## RADIUM

McHutchison J P and Brown W H. A New Development in Radium Therapy. *Lancet* 1926, ccx, 735

The authors describe a method they devised to employ the active deposit of slow change viz Radium D and E. This deposit is found in all exhausted emanation (radon) tubes that have been prepared and remain unused in radon tubing institutes. The beta and gamma rays from Radium D and E have a

penetration sufficient to irradiate 3 mm. of tissue. With this penetration such lesions as capillary and superficial cavernous naevi and lupus erythematosus can be treated.

Six cases are reported with a description of the technique. The results were very encouraging.

The active deposit is placed upon silver or nickel plates of various sizes and from 0.2 to 0.4 mm. in thickness.

The problem of measuring the intensity of various applicators was solved in part by comparing with uranium oxide films by means of a beta ray electroscope. Applicators producing an erythema in from three to seventeen days were made. From the viewpoint of the time of exposure those producing an erythema in a few days are superior. Blistering and crusting are to be avoided.

The applicators are placed in contact with the lesion for the number of days necessary to produce an erythema. To protect the applicator from injury by moisture and friction both of which remove the invisible active deposit a layer of crepe de chine is placed between the applicator and the skin. The half decay period of the applicators is sixteen years.

A. J. LARKIN, M.D.

#### MISCELLANEOUS

Reyn. A. The Efficacy of Various Sources of Light in General Light Bath Treatment. *Acta radiol.* 1925 IV 541.

The author first briefly sketches the history of light treatment in general and reviews some of the

investigations made especially by Finsen and his pupils with regard to the power of light from different sources to penetrate living tissues. He discusses various conditions and problems connected with the treatment of surgical tuberculosis with light and points out that none of the theories so far advanced to account for the curative effect of light in this affection has proved entirely satisfactory. It still remains to be determined which rays of light are chiefly responsible for the cure.

Clinical results indicate that the chemical rays—and among these notably the more long waved ultra violet violet and blue rays—are of particular importance and that the luminous red rays also play a rôle.

The author concludes that sunlight is by far the best therapeutic light and that sanatoria for the treatment of surgical tuberculosis should be located either in Alpine country or by the sea where the sunlight contains all of the beneficial rays in a high degree of intensity. Sunlight is beneficial only when it contains an abundant quantity of chemical light. In northern Europe where most of the chemical rays of the sun are absorbed by the atmosphere during a considerable part of the year recourse must be had to artificial light.

Various sources of artificial light are mentioned. The best is the carbon arc light. The lamps must be specially constructed, most of those found on the market do not meet the requirements. Only direct current can be used because it is the light from the crater that is most important in the treatment of these cases.

## MISCELLANEOUS

### CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Sequiera, J. H., Cheate, G. L., Handley, W. S., Cope, Z., and Shaw, E. H. *Precancerous States*. *Proc. Roy. Soc. Med.* Lond. 1916, xix, Sect. Surg. 1.

**SEQUIERA** The skin affections which predispose to cancer are (1) congenital anomalies such as pigmented and warty moles and xeroderma pigmentosa (2) senile changes such as senile keratoma (3) local irritation due to trauma or exposure to light, the X-rays, heat, and chemicals (4) scars from lupus lues and burns, (5) chronic dermatoses (6) Bowen's dermatosis and (7) Paget's disease mammary and extramammary.

**CHEATE** Epithelial hyperplasia of the breast is either directly or indirectly concerned in the carcinoma problem but it is impossible to describe a state of dysgenetic epithelial hyperplasia that inevitably ends in carcinoma.

**HANDLEY** Carcinoma is always preceded by long continued chronic inflammatory changes in the subjacent connective tissue. The lapse of time between the onset of these changes and the development of cancer may be as long as thirty years. Breast cancer often follows chronic mastitis and both conditions are found most frequently in the upper and outer quadrant of the breast. Chronic lymphatic obstruction is a frequent and perhaps constant factor in the etiology of cancer. It is probable that the rise in the lymph pressure leads to overnutrition and consequent proliferation of the connective tissue. Epithelial cells grow and develop normally only when they are associated in their growth with connective tissue cells.

The three most important factors in the causation of cancer are (1) chronic irritation bacterial, thermal or chemical (2) lymphatic obstruction and (3) an acid reaction of the tissues.

**COPE** The term 'precancerous' can be applied only to clinical conditions recognized by the naked eye. In the tongue there are three conditions of a suspicious nature: (1) chronic superficial glossitis with associated leucoplakia (2) papilloma and (3) dental ulcers at the margin of the tongue.

In the oesophagus there are no recognizable precancerous conditions.

It is very probable that cancer can and occasionally does become engrafted on simple ulcer of the stomach but this occurs much less frequently than is generally believed.

Cancer of the small bowel is very rare, but every papilloma of the small bowel must be regarded as a precancerous condition. In the large bowel cancer rarely follows ulcerative processes. There is little

evidence to prove that cancer of the colon is caused by the stagnation of bowel contents due to kinks.

**SHAW** The two chief precancerous conditions are chronic inflammation and simple new growths. All specimens of carcinoma of the breast show inflammatory changes but it appears quite evident that the inflammation preceded the new growth. A breast affected with chronic inflammation is in a precancerous state. Many papillomata of the skin, mouth and bowel are also precancerous conditions.

CYRIL J. GLASPEL, M.D.

Morton, J. J. *Cancer of the Skin*. *Arch. Surg.* 1926, vi, 625.

The three main types of skin cancers are the basal cell and squamous cell lesions and naevoid and melanotic growths. The last named resemble the squamous cell type but metastasize quickly and are rapidly fatal.

Morton discusses at length only the basal cell and squamous cell types. The histories of twenty-nine cases are given and illustrated by photographs or drawings.

### BASAL CELL EPITHELIOMA

Basal cell epithelioma is a lesion of advanced life, the average age at which it appears being 55 years. Males are far more frequently affected than females and blondes more frequently than brunettes. Senile keratoses, the most common precancerous condition, result in basal cell growths. Persons exposed to sunlight and the weather are predisposed. Basal cell cancer never arises in a normal skin being always preceded by a dermatosis. One of its common antecedents is the seborrhoeic wart.

Although this type of cancer may occur on the extremities and trunk, its most frequent site is above the clavicle.

Pathologically there are four types of basal cell cancer—the flat, the nodular, the ulcerative and the annular. All are characterized by induration and hardness of the edges and the presence of the translucent, pearly white nodules which are pathognomonic of rodent ulcers. The nodular types eventually ulcerate, forming yellowish crusts with dry scales. The annular type, which is rare, is characterized by a whitish yellow, healed central area surrounded by a raised, pearly edged growth or scabbed ulceration.

Basal cell cancers are often multiple and their growth under the skin is much more extensive than is indicated by their surface appearance. On cross section the basal cell cancer is characterized by a smooth surface, limited invasion of the subcutaneous tissues and alveoli much smaller than those of squamous cell growths.



Microscopically the cells of the basal cell cancer have all the staining qualities of the basal layer of the skin. Mitotic figures are easily found. After the corium is invaded a great variety of forms may be assumed in the arrangement of the cells—solid masses branching out growths hollow columns etc.

The course of the basal cell cancer is chronic. Often fifteen years may elapse before it attains the size of a quarter. There is a possibility that this type of cancer may be changed to a more virulent type and that a squamous cell growth may result if inadequate or no treatment is given. While basal cell cancer is relatively benign it kills by eroding the tissues and producing infection and hemorrhage. In the diagnosis it must be differentiated from squamous cell cancer, syphilis, lupus vulgaris and lupus erythematosus, blastomycosis, granuloma and certain skin inflammations.

It is the basal cell cancer which has established the reputation of the cancer quacks. Cures have been claimed for a great variety of methods. For early cases Morton regards irradiation with radium or the X rays as the method of choice. He has found however that a second or third course of treatment may be necessary before a complete cure is obtained. Growths which do not yield to two or three courses should be subjected to surgery. Advantages of knife incision over radiation therapy are that it removes the affected tissue completely in the minimal amount of time and allows an accurate diagnosis. Attention is called also to Clark's method of desiccation by monopolar endothermy, a method which is a distinct advance as it can be used on the eyelid and inner canthus.

#### TRANSITIONAL TYPES

Following his discussion of basal cell cancer the author reports two cases which he believes may represent transitional forms between the basal cell and squamous cell cancer.

#### SQUAMOUS CELL CANCER

Except for certain forms which arise from the scars of lupus vulgaris, squamous cell cancer like basal cell cancer is also a lesion of advanced life. It is more common than the basal cell cancer and occurs more frequently in men than women. No racial immunity to this cancer has been noted.

Although the etiological agent is not known it is evident that injuries, mechanical irritation, dermatoses, scars, ulcers and the action of certain chemicals and light rays play an important rôle in the causation of the lesion.

Squamous cell cancer may occur anywhere on the surface of the body but its most common site is the lower lip. The two principal varieties are the papillary and the deeply infiltrating ulcerative. The papillary form rapidly produces a projecting nodule of considerable size which ulcerates early. The ulcer becomes covered with a dry crust which drops off now and then and is reformed. The edges of the ulcer are irregular and indurated and if the crust is

removed the translucent grayish pink nodules of malignant tissue can be seen. The infiltrating type forms no external nodule to speak of, producing simply an abraded surface with jagged solid outlines and very extensive deep induration. The ulcer may have a very innocent appearance.

Squamous cell cancer may result from occupational irritations causing warts, patches of hyperkeratosis and skin atrophy.

Microscopic study shows the pink staining angular cells in varying degrees of cornification forming more or less complete epithelial pearls. The more rapid the growth of the squamous cells the less the chance of differentiation into the cornified type. Broders has found a basis for prognosis by comparing the degree of reversion to type with the clinical course of the disease. The greater the degree of cornification the less virulent the lesion.

The squamous cell cancer produces metastases while the basal cell cancer does not. Unfortunately there is no symptom which sends the patient to the physician early. The differential diagnosis most essential to make is between cancer and syphilis. If there is no response to antisyphilitic drugs within ten days the lesion must be considered malignant.

As squamous cell cancer metastasizes early the surgeon should remove the primary lesion with a wide margin and the lymphatic glands draining the area in one block.

Radiotherapists agree almost unanimously that squamous cell cancer is much more resistant to radiation than basal cell cancer. This should dispose of the theory of selective destructive action on the cancer cells. Injury to and fibrosis of the lymphatic channels has no demonstration in fact. Quick says:

By external radiation alone we do not feel we have ever been able to destroy completely fully developed epidermoid carcinoma in the cervical nodes.

In the author's opinion a combination of surgery and radiotherapy is desirable in every case. The treatment of choice is removal of the primary growth by electrocoagulation or cautery dissection and the use of emanation seeds *in situ*. Whenever possible all malignant tissue should be removed.

Squamous cell cancer of the scalp and forehead does not require removal of the regional glands but in cancer of the face, cheek, eyelid, chin or nose the glands should be removed with the lesion.

PAUL W. SWEET, M.D.

Nichols J. H. Goodhue F. W. Champion M. E. Bigelow G. H. and Lombard H. L. Cancer in Massachusetts. Boston M. & S. J. 1926 cxciv 388.

Cancer is increasing but there are indications that the peak of the curve may be nearly reached. In the United States Massachusetts has the highest death rate from cancer.

The cancer rate increases with the increase in the density of the population up to a population of about 4,000 per square mile and then remains nearly stationary.

The average length of life of persons who are operated upon for cancer and ultimately die from the condition is twenty two and eight tenths months, while that of persons who die from the condition without operative treatment is twenty months. The average duration of the condition from its onset to the time of operation is ten and three tenths months. The average patient seeks the physician's advice eight months after first noticing the symptoms.

As about one fourth of cancer deaths occur in hospitals there is need for additional beds for patients suffering with cancer. SAMUEL KAES M D

Crile G W The Contact of the Surgeon with the Problem of Cancer *J Michigan State M Ass* 1926 XXV, 124.

Precancerous lesions should be removed completely when possible or given no treatment at all.

For established cases of cancer Crile advocates radical operation if the condition is operable and palliative surgery or radiation or both if it is inoperable. The treatment indicated for cancers of the various organs and tissues he summarizes as follows:

1 Skin radiation except in cases of pigmented moles, which should be excised.

2 Buccal surfaces mucous membranes of the mouth, excision, early cancer of the tongue, electric coagulation or the use of the actual cautery, early cancer of the lip, radium late cancer of the tongue or lip excision plus block dissection of the glands.

3 Larynx intrinsic carcinoma, laryngectomy plus postoperative radiation extrinsic carcinoma block dissection plus radiation if possible, tracheotomy plus radiation if inoperable.

4 Thyroid thyroidectomy plus radiation if operable, decompression plus radiation if inoperable, prevention by excision of fetal adenomata.

5 Esophagus gastrostomy for feeding plus radiation.

6 Breast radical operation. The value of radiation is still *subjudice*.

7 Stomach resection if possible gastro-enterotomy if inoperable.

8 Intestines sigmoid and rectum, colostomy plus radical operation if operable, colostomy plus radiation if inoperable.

9 Uterus for the fundus, radical operation for the cervix, radiation.

10 Genito-urinary organs operation plus postoperative radiation in selected cases.

SHIRLEY C LYONS M D

## DUCTLESS GLANDS

Kuestner H Investigations of the Changes in Internal Secretion After Extirpation of the Uterus Operative Castration and Roentgen Castration and in the Normal Climacterium (*Untersuchungen ueber die innersekretorischen Veränderungen nach Uteri extirpation operativer Kastration, Roentgenkastration und im normalen Klimakterium*) *Moratscher f G bairisch u Gynäk* 1923 LIX, 284.

The author investigated the changes in internal secretion after operative removal of the uterus operative castration, and roentgen castration and in the normal climacterium to determine whether the menstrual disturbances of the menopause which are manifested chiefly by increased or irregular menstruation are best treated by operative removal of the uterus or X-ray treatment of the ovaries.

The function of the glands of internal secretion was tested by the Abderhalden method as simplified by Luttge and von Mertz. By means of this test only a pathological change in the internal secretion of a gland is shown. Normal function and complete absence of function cannot be demonstrated. The procedure consists in mixing the patient's serum with a previously prepared extract of the organ and maintaining the mixture at a temperature of 37 degrees for twenty four hours. When changes have occurred in the gland, substances resembling amino acids are formed. These are extracted with 96 per cent alcohol and can be demonstrated by the ninhydrin reaction.

It was found that the serum of women in the normal climacterium and those who had been operatively castrated had no reaction to ovarian substance. The results were similar in the twenty-one cases in which only the uterus had been removed. Following castration with the X-ray the serum of twenty-one of twenty-three women showed a positive Luttge von Mertz reaction to ovarian substance.

As the Luttge von Mertz reaction to ovarian tissue was found still positive even four years after the X-ray exposure, it probably indicates a biological change such as is associated only with very severe disturbances.

Since roentgen castration not only destroys the normal function of the ovary but replaces it by what is apparently a pathological function, it is evident that great care is necessary in judging the indications for roentgen treatment and that extirpation of the uterus is preferable unless some other ailment such as cardiac failure, struma, or diabetes renders operation particularly dangerous. SCHUMACHER (G)

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## EDITOR'S COMMENT

THE tremendous impetus that has been given to the study of the physiology and pathology of the liver and bile passages as a result of the introduction of Graham and Cole's method of gall bladder visualization is reflected in a constantly increasing number of papers on this subject emanating from surgical clinics in widely separated centers. Rubenstone and Tuft's discussion of the comparative value of functional liver tests (p. 209) and Graham, Lyon, Zink, and George's symposium on the diagnosis of gall bladder disease (p. 210) are some of the recent contributions that are helping to make the diagnosis of disease of the liver and bile passages more certain and accurate.

Some of the difficulties of secondary operations on the gall bladder and the bile passages are discussed in Payr's interesting paper on exposure of the common duct in operations for recurrence of stone after cholecystectomy (p. 212). The use of a catheter and syringe is again recommended as a method of disengaging stones high up or low down in the ducts.

The possibility of anastomosing a biliary fistula with the stomach or duodenum as emphasized by Babcock (p. 211) and the ease with which deep hemorrhage may be controlled by upward pressure on the hepatoduodenal ligament with the index finger in the foramen of Winslow as has been suggested by Gibson and other surgeons should be remembered in connection with Payr's suggestions for overcoming the technical difficulties of the operation. Gutierrez's account of the implantation of a pancreatic fistula into the stomach (p. 214) indicates the possibility of successfully treating pancreatic fistulae as well as biliary fistulae by this method.

Fuch's studies of the inner topography of the kidney (p. 23) emphasizes the fact that just before they enter the parenchyma large blood vessels from the ventral group pass in the inter-

stices between the calyces to join the dorsal group, and that when the incision suggested by Zondek is made to deliver a large pelvic stone these large vessels may be divided. Bouchard and Laquiere's examination of a patient nineteen years after ureterorrhaphy emphasizes the importance of the peristaltic action of the ureter in the normal evacuation of the renal pelvis. In this case, although the ureter had been sutured without resulting stricture formation, the pelvis and upper ureter were dilated and filled with turbid stagnant urine.

Butler and Delprat's review of ninety-three cases of intestinal obstruction from the San Francisco Emergency Hospital (p. 206), Weeks and Brooks' recommendation as to the treatment of acute peritonitis (p. 207), and Delore, Creyssel, and De Rougemont's discussion of the care of patients before and after operations on the stomach (p. 205) are of particular interest because of the emphasis placed on non-operative measures—fluid administration, complete rest for the gastrointestinal tract and gastric lavage—as important measures in securing rest and aiding elimination.

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Voltz' review of the results of irradiation treatment of carcinoma of the cervix in the Munich Gynecological Clinic from 1912 to 1919 (p. 217), Davis' description of methods of treating deep X-ray burns (p. 233) and Albee's interesting account of a difficult and eventually successfully treated case of fracture of the femur complicated by osteomyelitis (p. 230) are a few of many abstracts worthy of special note in this month's issue of the ABSTRACT.

# INTERNATIONAL ABSTRACT OF SURGERY

SEPTEMBER, 1926

## COLLECTIVE REVIEW

### THE PATHOGENESIS OF THE GASTRIC-DUODENAL ULCER<sup>1</sup>

By GEORGE HALPERIN, M D, CHICAGO

THE so called peptic ulcer of the stomach and duodenum is a common malady in man. Its cause, however, is as much a mystery today as it was when Claude Bernard first demonstrated that the leg of a living frog will be digested if placed through a fistula in a dog's stomach. Why does not the gastric mucosa digest itself? Dragstedt and Vaughn have shown that other living tissues will resist the action of gastric juices. John Hunter believed that a certain vital principle inherent in the parts protected them from digestion.

Since healthy cells will successfully withstand the action of gastric juice, we must presuppose that the vitality of the cells must be lowered before the gastric juice can exert its proteolytic action upon them. Virchow postulated that all chronic gastric ulcers originate from an erosion. Aschoff defines an erosion as a superficial loss of substance of the mucous membrane resulting from the disintegration of a circumscribed mucosal necrosis or from a hemorrhagic infarction with secondary digestion. The loss of tissue must be limited to the mucosa and the uppermost layers of the submucosa. The muscularis proper is not involved.

Thus the ulcer problem can with advantage be approached from two sides, the origin of the erosion and the development of a chronic ulcer from the erosion. The erosion is the pivotal point from which we must start and to which we must return in all our speculations regarding the origin of the chronic gastric or duodenal ulcer. That the origin of the erosion has not been

solved is attested to by the existence of several widely divergent theories. The following will be here discussed: (1) The circulatory theory, (2) the neurogenic theory, (3) the infectious theory, (4) the inflammatory theory, and (5) the mechanical functional theory.

#### I THE CIRCULATORY THEORY

The circulatory theory was advanced by Virchow and Hauser in 1853. Virchow taught that ulcers are produced by an infarction of a terminal blood vessel with consequent necrosis, the starting point for the digestive action of the gastric juice. This view was universally accepted. In connection with this conception the role played by the excessive gastric secretion assumed a special importance. Among the older clinicians, Riegel considered hypersecretion the decisive factor. This view was later shared by Boas, Sippy, and von Bergmann, in fact by the majority of clinicians.

It was pointed out that chronic ulcers occur only in that part of the gastrointestinal tract which is exposed to the action of the hydrochloric acid, viz., the stomach and the first two inches of the duodenum. They do not occur in the esophagus and are rare in the cardia. When the jejunum is exposed to the action of the gastric juice, as following a gastro-enterostomy for ulcer, the well known marginal ulcer frequently develops. On the other hand, no such type of ulcer has ever been observed when the gastroenterostomy was performed for gastric cancer.

<sup>1</sup>Received for publication July 7, 1926.

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ulcer patients are "vagotonics" or "sympatheticotonics." Attractive as this hypothesis may seem, it is unsupported by convincing clinical data on the one hand nor by experimental data on the other.

### III THE INFECTIOUS THEORY 1 STREPTOCOCCI 2 OIDIUM ALBICANS

1 *Streptococci* Rosenow claims to have been able repeatedly to produce ulcerations in the stomachs of experimental animals by inoculating with streptococci cultivated from foci of ulcer patients and from the ulcers themselves. Such foci were usually abscessed teeth or tonsils. The streptococci in these cases seem to possess a characteristic selective affinity for the mucous membrane of the stomach or the duodenum. Streptococci were again recovered from the experimental lesions and again reproduced ulcerations in stomachs upon re-injection. The ulcers thus produced resembled those in man in location, in gross and microscopic appearance, and in the fact that they tended to become chronic, to perforate, and to cause severe or fatal hemorrhage. According to Rosenow, the necessary requirements have been fulfilled to warrant the conclusion that the usual ulcer of the stomach and duodenum in man is primarily due to a localized hematogenous infection of the mucous membrane by streptococci.

Mann and Williamson of the same clinic (Mayo) have developed a rather ingenious method for producing chronic ulcers in dogs. They transplant the duodenum into the ileum and anastomose the jejunum into the pylorus. Rosenow did not accept their physiological explanation of ulcer causation. He was able to find a streptococcus in these ulcers as well. He again demonstrated their selective localizing power on intravenous injection, their presence in the foci of infection of the experimental animals, and their ability to produce poison *in vitro*. More than that, he was able to immunize some of the animals against ulcer development.

In a series of dogs, Ivy failed to produce ulcers by injecting streptococci of proven virulence into two or three branches of the gastro-epiploic artery.

Rosenow's conclusions await confirmation by other workers.

2 *Oidium albicans* Very recently (1921), Askanazy claims to have found *oidium albicans*, long known as a common saprophyte of the human mouth in the craters of ulcers in resected stomachs. He succeeded in developing ulcers in animals by inoculating into injured mucosa

ground up tissue taken from the craters of human ulcers. This work was negated by the findings of other workers who discovered these organisms chiefly in the periphery of ulcers and not in the necrotic zone, and were not able to reproduce the lesions. The organism is therefore regarded as an accidental saprophytic contamination of no etiological importance.

### IV THE INFLAMMATORY THEORY

So far, attempts to solve the ulcer problem have brought out the fact that healthy mucosa will resist digestion. Therefore, a loss of cell vitality must be assumed to occur before the development of an ulcer. It was necessary to determine the earliest damage to the mucosa. Trauma, mechanical, thermal, or chemical, suggested itself as the possible cause. Experimental attempts in this direction resulted in failure since, as has been previously mentioned, no one succeeded in producing a chronic ulcer experimentally.

It was suggested also that the initial damage might be brought about by circulatory disturbances in the gastric or duodenal vessels. Pathological conditions of the vessels themselves, such as stasis, thrombosis, embolism, or sclerosis, were considered. It was borne in mind also that circulatory disturbances might be brought about indirectly by neurogenic influences, such as angiospasm or by spastic contraction of the gastric musculature resulting in compression of the gastric vessels. Any of these disturbances might lead to the formation of hemorrhagic infarcts or areas of anemic necrosis, a starting point for digestion by the active gastric juice.

Experimental ligation of blood vessels produced erosions and ulcerations, but these displayed the same tendency to heal rapidly as experimental ulcers caused by direct injury to the mucosa. Such experiments therefore did not throw any light upon the origin of chronic peptic ulcer in man.

The recent increase in stomach resections for gastric and duodenal ulcers furnished an abundant and valuable material for histological studies. So far, reports have been published by relatively few workers, chief of whom are Moscowicz, Konjetzny, Orator, Kalma, Lehman, and Puhl. These studies assume a particular significance because of the striking uniformity in the findings of the various investigators and the number of stomachs examined, which is well up in the thousands. They point out in the first place the unreliability of postmortem material as contrasted with warm fresh material obtained by



resections. These studies have resulted in an entirely different viewpoint.

It was found that in all cases of gastric or duodenal ulcer there existed a gastritis or a duodenitis. The inflammation was most marked in the antrum, the fundus portion exhibiting very little or no inflammatory change. The duodenal mucosa showed an inflammatory change in cases of duodenal ulceration, and not infrequently also in cases of gastric ulcer. In a very considerable percentage of cases the areas of gastritis contained multiple small oval round, and linear erosions, the largest of which could be recognized macroscopically as superficial erosions. In some of the preparations such erosions covered by a fibrinous deposit were unusually numerous. Gross inspection of these specimens gave the impression that the lesions represented various stages of development of the same process. Specimens were observed which showed no frank ulcer but just the picture described.

Konjetzny found microscopically in cases of gastric or duodenal ulcer a gastritis or duodenitis in all stages of development. Closer histological study revealed their unmistakably inflammatory character. The histological picture was so typical as to be identical in dozens of preparations. There was to be observed an infiltration of the interstitial tissue with polymorphonuclear leucocytes. The epithelium of the glands showed here and there degenerative changes such as fatty infiltration or desquamation and loss of epithelium. In places where the epithelial lining was seen to be broken there were noted accumulations of polynuclear leucocytes in a meshwork of fibrinous exudate. These histopathological units differed from those of a typical ulcer in extent only. The findings described were confined to the antrum and the duodenal bulb.

Konjetzny particularly calls attention to the fact that most painstaking studies of the blood vessels in these areas failed to reveal any change in their walls, neither did he observe any evidence of hemorrhage such as hemosiderin deposits. He had never noted anæmic necrosis or hemorrhagic infarction or the so-called hemorrhagic erosions so frequently seen in the fundal portion at autopsy. In view of his findings the theory of a nutritional disturbance brought about through direct or reflex circulatory disturbances and causing anæmic necrosis or hemorrhagic infarction in otherwise normal gastric mucosa as a starting point for peptic digestion appears to him utterly untenable. On the other hand inflammatory changes in the mucosa without any evidence of peptic digestion were observed with

great regularity. The periodicity of the clinical symptoms may find an explanation in the tendency of these erosions to heal.

The conclusion was drawn that the development of gastric or duodenal ulcer depends upon a more or less acute inflammatory process of the mucosa, as the result of which the gastric juice can exert its proteolytic action upon the damaged area. Because of functional motor activity the resulting superficial defects or erosions of the mucous membrane can develop into chronic ulcers.

The occurrence of a local gastritis in the vicinity of an ulcer was well recognized but was always regarded as secondary to the ulcer. The idea that it may be the cause rather than the effect was first conceived by Cruveilhier and later emphasized by Mathieu. Paul Cohnheim considered "acid gastritis" the first step in the development of a gastric or duodenal ulcer. Nauwerck in 1895 expressed the belief that the gastritis might be the primary condition and the cause of an ulcer. He coined for it the comprehensive term "gastritis chronica ulcerosa."

If it be true that the erosions found in the areas of inflammation are the starting points of ulcer formation, it remains only to follow or rather to explain their conversion into chronic ulcers. This phase of the problem has been elucidated by Aschoff and his school. In his anatomical, mechanical or motor functional theory Aschoff endeavors to explain the relation of mucosal erosions to chronic ulcer.

#### V. MECHANICAL OR MOTOR FUNCTIONAL THEORY

Essential to the understanding of the mechanical or motor functional theory is Aschoff's conception of the function of the so-called "Magenstrasse"—the gastric pathway or gastric channel, and of the isthmus portion of the stomach. The name "Magenstrasse" was applied by Waldeyer in 1908 to a characteristic arrangement of the folds of gastric mucosa along the lesser curvature.

The fact that practically all typical gastric ulcers occur in the area of this gastric channel suggested that for some reason the *magenstrasse* is particularly vulnerable.

To demonstrate the existence of the gastric channel Bauer advises fixing the stomach with formalin by the intravascular route not later than three or four hours after death. Such a stomach still retains its tonus, but is no longer capable of contracting with consequent change of the mucosal topography. When it is opened along the greater curvature, a groove is found in

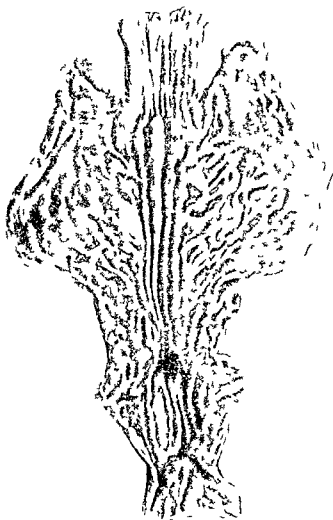


Fig 1 The stomach of an adult removed two and one half hours after death The magenstrasse very prominent Note the difference between the mucus folds of the corpus and those of the pylorus (after K. H. Bauer)

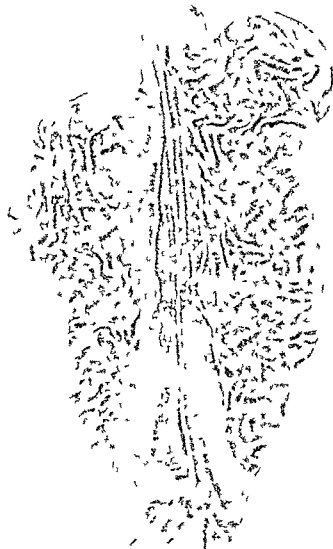


Fig 2 Human stomach removed one and one half hours after death fixed for twenty four hours, and then opened (after K. H. Bauer)

the lesser curvature area This groove, which begins at the cardia and runs toward the pylorus, is interrupted at the incisura angularis It is delineated by two or three wall like longitudinal folds The base of the groove shows both smooth mucosa and lower ridges These parallel folds run from the cardia as prolongations of the longitudinal folds of the oesophagus, down to the pylorus without exhibiting any communicating transverse folds They are not demonstrable in greatly distended stomachs When Bauer introduced 25 per cent sulphuric acid into the stomach of a partly anesthetized dog through a stomach tube, the escharotic effect of the acid was confined to the magenstrasse

The fold system of the gastric mucosa is of course due to its redundancy The tone and the contractions of the gastric musculature throw the

redundant mucosa into folds The topography of the gastric mucosa is therefore the anatomical expression of the functional activity of the gastric musculature What determines the peculiar arrangement of the gastric pathway? The answer must be found in a study of its muscular structure As is known, the stomach, unlike the rest of the gastro intestinal tract, possesses three muscular layers, a longitudinal, a circular, and an oblique layer Bauer has demonstrated that the special anatomical character of the magenstrasse is due to the existence there of the oblique fibers in addition to the longitudinal and circular fibers

Contraction of the circular fibers throws the mucosa into longitudinal folds and narrows the stomach throughout, but it is the presence of oblique fibers that explains the persistence of the



Fig. 3 Erosions of the gastric pathway (After Strohmeyer)

longitudinal folds of the *magenstrasse*. The synergistic action of the circular with the oblique fibers forming horseshoe like interlacing bundles explains why, as shown roentgenologically, food will be held at the cardia for a considerable time although this area possesses no sphincter. The longitudinal folds of the gastric channel cease at the incisura because the oblique fibers cease at that point.

The gastric channel therefore differs from the rest of the stomach in that it has a characteristic musculature. By the contraction of its fibers it can form a lumen of its own distinct from that of the rest of the stomach. Bauer concludes that the structure and the function of the *magenstrasse* suggest that it is the phylogenetic rudiment of the gullet of ruminating animals. The human stomach represents the welding of two organs. The greater vulnerability of the *magenstrasse* is explainable on the ground that it is not well adapted to be a part of the digesting stomach, being in reality a survival of the original gullet. The pathogenesis of the *magenstrasse* therefore falls in a class with that of the appendix and the gall bladder. In other words it shares together with the latter structures the disposition of all rudimentary organs.

Aschoff points out that the blood supply of the *magenstrasse* is not as rich as that of the fundus portion. The fundus is supplied by the branches of the right and left gastroepiploic arteries and by the collateral branches from the

gastric artery. The gastric channel is supplied by the recurrent branches of the gastric or pyloric arteries only.

Ligation experiments performed by Yano on rabbits (unpublished, quoted by Aschoff) demonstrated the difference. Ligation in the region of the gastro-epiploic arteries had no recognizable effect upon the fundal mucosa, whereas ligation in the area of the gastric or pyloric artery led to localized nutritional disturbances which were demonstrated by the subsequent intravenous injection of dyes. The mucous membrane areas belonging to the ligated vessels remained more or less colorless. Aschoff thinks that in man also, arterial blocking must play a particular rôle in the origin of these changes in the gastric channel. Moreover, he calls attention to the fact that the branches of the gastric artery have a segmental arrangement in the gastric wall and the areas between these may be particularly affected by the frequent and powerful contractions of the *magenstrasse*.

It is interesting to examine Aschoff's views regarding the origin of the erosion itself. He insists upon differentiating between hemorrhagic erosions of the fundus and erosions of the gastric channel. These lesions owe their origin to entirely different conditions, but in neither case do infectious, toxic infectious, or mechanical factors play a prominent part. He sees in circulatory disturbances the probable cause of both. Fundus erosions are caused by venous stasis and the spasmodic movement of vomiting. Erosions of the *magenstrasse* are probably the result of the peculiar spastic condition of the channel itself or of arterial blocking. In view of Konjetzky's histological studies embolic blocking can be ruled out. Atherosclerotic changes are more frequent but they are also unusual since these erosions and ulcers develop in the young and the middle aged. It is possible that spastic contractions of the vessels themselves may be responsible. While experimental evidence is lacking Aschoff is inclined to believe that such contractions play an important part in the origin of erosions of the *magenstrasse*.

The isthmus is to be looked upon not as a special anatomical structure, but as a functional one. It was first described by Forsell as the narrow pass. Aschoff frequently observed it in examining the stomachs of recently killed soldiers during the late war. It represents a tonic contraction of a part of the stomach. On a mixed diet the isthmus takes on the shape of a funnel through which the fluid contents rapidly digested in the corpus are transported to the vestibule.



FIG. 4 I Limit between the fundus and the corpus II Limit between the infundibulum and pyloric canal III Limit between the pyloric canal and duodenum i Isthmus (After Aschoff)

and from there are evacuated by the contraction of the pyloric canal

The gastric channel extends from the cardia to the beginning of the pyloric canal. The impression is given that the gastric channel and the pyloric canal should be regarded as one functional unit. The separation of the *magenstrasse* from the rest of the stomach can be well recognized even on transverse section throughout a contracted stomach. It can then be seen that the channel, now better called the groove, is limited by the four familiar folds, while the folds of the fundus lie irregularly, one against the other. One gains the impression that the contracted, i.e., more or less empty stomach drains the juices from the fundus into the gastric groove so that they may flow toward the pylorus. To this conception the objection has been raised that no such gradual opening out of the stomach from the gastric groove is to be seen in roentgenograms. Very recently, however, Orator has been able to show just such opening pictures in his roentgenological studies at the Vienna Surgical Clinic. With the rapid introduction of an opaque meal, the fold system opens up very quickly so that these differences are not recognizable.

It is now quite evident that the fate of an erosion in the *magenstrasse* will be quite different from that in the fundus. In the latter one finds

the greatest mobility of the fold system, in the former taut longitudinal folds. The fundus discharges gastric juice, while the *magenstrasse* receives it and acts as a sort of a drainage tube. Losses of substance in the gastric channel continue to gape, and they come in contact with the gastric juices much longer and are injured mechanically by the peristaltic movements more than erosions in the fundal portion. Also of importance may be the fact that fundal mucosa secretes a thin mucus which is poured out over the wound surface for protection. This mucous formation has not been observed in the region of the *magenstrasse*.

To sum up, the particular predilection of the *magenstrasse* for the development of chronic ulcers is attributed to the following facts:

- 1 As a rudimentary structure the *magenstrasse* is not well adapted to be a part of the digesting stomach.
- 2 Its blood supply is comparatively poor.
- 3 Because of its special physiological function as the gastric pathway, it is subjected to frequent and powerful muscle spasms.
- 4 The peculiar anatomical arrangement of its folds makes it difficult for a mucosal erosion to heal.
- 5 The mucous membrane of this area does not secrete a protective mucin.

The last word upon the subject of the pathogenesis of the gastric duodenal ulcer has not yet been spoken. Much new knowledge has been gained from recent histological studies of resected stomachs. These studies have given us a new viewpoint, namely, the inflammatory theory. The work of Aschoff and his collaborators has thrown a flood of light on the subject of the physiology of the stomach. New and original conceptions regarding the function of the gastric channel and the isthmus have opened up new vistas. We seem to be on the threshold of a solution of this difficult and important problem.

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# ABSTRACTS OF CURRENT LITERATURE

## SURGERY OF THE HEAD AND NECK

### HEAD

Iry, R. H., and Curtis, L. Fractures of the Mandible. An Analysis of 100 Cases. *Dental Cosmos*, 1926 lxxviii 439

The 100 cases of fracture of the mandible reviewed by the author did not include fractures resulting from bone infection or new growths. Ninety per cent of the patients were males, and with one exception all were over 18 years of age. All of the fractures were due to force. Sixty-eight per cent were single, 31 per cent were double, and one was triple. In ten cases no fixation was necessary. Seventy-nine (88 per cent) were treated by wiring the upper and lower teeth together. The number of fixations by several different methods, the time between the injury and the fixation and the time of maintenance of the fixation are given in a table in the original article.

The authors conclude that fractures of the mandible demand the most accurate reduction and approximation of the fragments based on proper occlusion of the teeth, and that in 90 per cent of the cases of any type of fracture of the mandible the simplest and most effective method of fixation is intermaxillary wiring of the teeth.

EMIL C. ROBITSHEK, M.D.

### EYE

Weeks, J. E. Tuberculosis of the Eye. *Am J Ophth*, 1926 3 s ix 243

The various manifestations of tuberculosis in different parts of the eyeball and its adnexa are described briefly. The different tuberculous commonly employed are compared and their use in diagnosis is discussed. The author comments also upon tuberculin treatment and its results.

THOMAS D. ALLEN, M.D.

Verhoeff, F. H. A Case of Metastatic Intra Ocular Mycosis. *Arch Ophth*, 1926 lv 225

Verhoeff reports a case of metastatic intra ocular infection with organisms which formed granules and clubs resembling those found in actinomycosis. The organisms differed from actinomyces in that the filaments which composed the granules were more delicate, unbranched, and gram negative. They were not acid fast.

The eye was enucleated, but the patient had fever and enlargement of the liver and there were evidences of endocarditis. Potassium iodide was administered, but the condition continued and

death occurred five months after the onset of the first symptoms.

It is suggested that similar cases without ocular involvement may sometimes escape recognition.

SAMUEL A. DURE, M.D.

Lancaster, W. B. The Fusion Faculty and Some of its Anomalies. *Am J Ophth*, 1926 3 s ix, 247

Lancaster briefly reviews the development of the fusion faculty in animals. In most lower animals the fusion faculty is little needed or developed. In the carnivora and animals that live in trees accurate judgment of distance is important. The eyes therefore turn forward so that the fields of vision overlap and binocular fusion develops. The mechanism necessary to secure binocular vision includes fibers connecting the eye and various visual centers and the motor apparatus.

Points not on the horopter impressing points of the retina not identical give the sense of depth. Different lights and colors falling on corresponding points of the two eyes lead to rivalry of the two retinal fields and diplopia. Suppression of one retinal image is learned when it serves to meet the visual needs.

THOMAS D. ALLEN, M.D.

Suker, G. F. and Cushman, B. An Improved Technique for Iridectomy for Glaucoma. *Am J Ophth*, 1926 3 s ix 268

In iridectomy as performed by the authors a curvilinear conjunctival incision is made about half way between the limbus and the insertion of the superior rectus with its convexity toward the cornea. The flap is then dissected free from the limbus of which from 6 to 8 mm is exposed, and the dissection continued slightly beyond the limbus without splitting the cornea. A cataract knife is then introduced vertically 1 or 2 mm above the limbus at either end of the exposed sclera and thrust 1 cm into the anterior chamber, just anterior to the iris. The section being then completed by an upward sawing cut to a point opposite the wound of entrance. This gives a shelving serrated incision practically through the scleral spur.

The iris is seized with a forceps drawn out gently and downward and forward toward the cornea. With an iris scissors, successive small nicks are made in the iris one blade being kept under the upper scleral edge until the opposite end of the section is reached. The iris is then drawn in the opposite direction and severed completely.

The conjunctival flap is replaced by stroking with a spatula. Sutures are rarely necessary.

The advantages claimed for this method are the conjunctival flap the cicatrix away from cornea tissue a serrated scleral section favoring a filtering scar and prompt healing. The tension is reduced and remains so without the use of miotics. After the operation 1 per cent atropine may be instilled. The danger of late infection is very slight. Drawing the iris downward without tearing it favors the deposit of iris pigment in the wound. From twenty four to forty eight hours after the operation the suspensory ligament and occasionally the ciliary body are visible through the coloboma. When the anterior chamber is obliterated the section may be made as in a cyclodialysis. Scopolamine and morphine are used before the operation in all cases.

SAMUEL A. DURR, M.D.

**Obarrio P. Lid Traction The Greatest Safeguard Against Vitreous Loss in Cataract Operation**  
*Am J Ophth* 1926 35 15 264

Decreased intra ocular tension renders vitreous loss less probable while pressure on the globe causes loss of vitreous by increasing the intra ocular tension. Traction on the lids causes collapse of the cornea and diminishes tension making instrumentation safer particularly the use of a lens spoon or loop. The mechanical principles and the anatomy involved are discussed. The speculum used by Obarrio is similar to de Lapersonne's speculum. It has blades which fit well with little tendency to slip and between the arms and the blades are hinges which make it possible to rotate the arms backward or forward without disturbing the relation between blades and the lids.

The assistant seizes the speculum as soon as the corneal section is completed and makes traction constantly on both lids until the eye is banded. The operator's movements are anticipated in order that he may be given the best exposure at all times.

In enucleations pressure is made on the lids to cause the eye to move forward.

SAMUEL A. DURR, M.D.

## EAR

**Shambaugh G. E. The Development of the Membranous Labyrinth** *Arch Otolaryngol* 1926  
III 233

According to Shambaugh one of the difficulties in preparing sections for microscopic study of the internal ear is the securing of sections which will present the relationships in such a way that they can readily be understood. The labyrinth of the ear of the domestic pig is particularly suitable for such preparations because in the embryo as well as in the newborn pig it can be separated with its capsule from the surrounding structures with little difficulty.

Shambaugh describes and illustrates five preparations as follows:

**First preparation (Fig 1)** This preparation was obtained from a pig 3.5 cm long. The section is horizontal passing through the cochlea and vestibule

and the posterior part of the capsule which contains the semicircular canals. Included in this preparation is the stapes. The cartilage forming the anterior part of the stapes is directly continuous with that of the capsule whereas the posterior border of the stapes has already separated from this capsular cartilage through the formation of connective tissue.

The relations of the facial nerve and large blood vessels the location of important structures such as the sacculus the utricle and the macula acustica and the location of the semicircular canals in the posterior part of the preparation and of the cochlea and ductus cochlearis in the anterior part are described in detail.

**Second preparation (Fig 2)** This preparation shows a marked advance over that from the 3.5 cm embryo. The structures forming the beginning of the perilymphatic vestibule and those which enter into the formation of Corti's organ are described.

**Third preparation (Fig 3)** This section again passes through the niche of the oval window in which is recognized the cartilage forming the stapes. Attention is called to the thickening of the epithelium in the sacculus and utricle for the formation of the macula and the plane of these two end organs lying at right angles to each other. No sign of an otolith membrane is as yet seen.

In the basal coil at the lower right hand corner of Figure 3 the absorption of the connective tissue reticulum surrounding the ductus cochlearis is well started. The beginning of a scala vestibuli above and of a scala tympani below is recognized. The upper wall of the ductus cochlearis goes to form the membrane of Reissner. The absorption of connective tissue for the formation of the scala tympani is not advanced far enough to form a recognizable membrana basilaris.

**Fourth preparation (Fig 4)** In this preparation the cross section of the cochlea as known in adult life becomes recognizable. Attention is directed to the changes in the epithelial thickening forming Corti's organ also to the development of a substantial membrana tectoria. The development of the scala tympani throughout the basal coil has progressed far enough to permit the formation of the structure which is later recognized as the membrana basilaris and in all but the apical coil the formation of the spiral ganglion is also well advanced.

**Fifth preparation (Fig 5)** This section passes directly through the center of the modiolus cutting the ductus cochlearis in each of the two and one half coils in a manner which shows Corti's organ to best advantage that parallel with the pillars of Corti. The cartilage of the capsule has completely changed into bone and there is a mechanism fully developed and apparently ready to receive impressions from the impulses of sound waves. It seems probable therefore that a newborn pig is capable of hearing.

A. R. HOFFENDER, M.D.

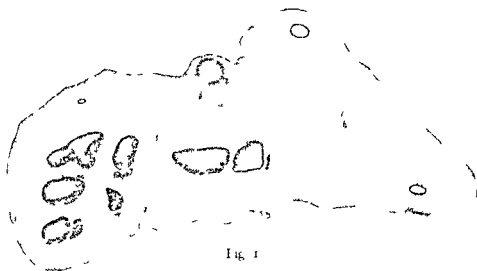


Fig. 1



Fig. 2

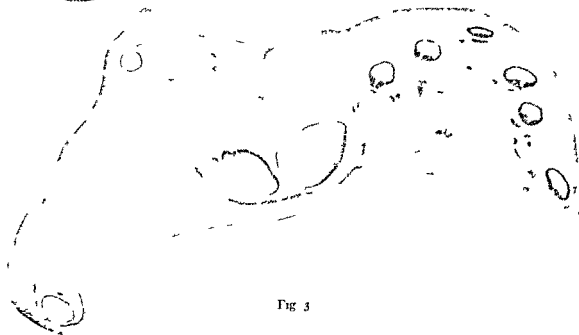


Fig. 3

*Shambaugh — The Development of the Membranous Labyrinth*





Fig. 4



Fig. 5

Hollender A R and Cottle M H A Clinical and Experimental Study with Some Physical Agents in Partial Deafness Preliminary Report *Arch Otolaryngol*, 1926, 11 338

The authors made experimental and clinical studies in an attempt to establish a basis for the use of diathermy in the treatment of progressive undifferentiated defective hearing. They do not maintain that electrophysical therapy is specific or that it replaces other measures which are known to offer a favorable prognosis, but state that in a large series of cases of chronic catarrhal deafness it has been found of some value even after other measures have failed. Further experience may show that it is possible thereby to arrest the symptoms of otosclerosis.

The clinical improvement obtained is dependent upon four factors (1) the nature and extent of the pathological changes, (2) the apparatus and electrodes used, (3) the manner in which the treatment is applied, and (4) the length of time the treatment is continued.

The treatment should be applied on the basis of anatomical principles and continued over a long period.

The time that has elapsed since the author's experiments has been too short to warrant a decision as to the permanency of the improvement or cure.

JAMES C BRASWELL, M D

## NOSE AND SINUSES

Phelps A A Congenital Occlusion of the Choanæ *Ann Otol Rhinol & Laryngol* 1926, XXXV, 143

Congenital occlusion of the choanæ may be membranous or bony unilateral or bilateral, complete or incomplete and accompanied by other congenital defects. It occurs in females twice as often as in males and is bilateral three times more frequently than unilateral. Unilateral occlusion occurs much more commonly on the right side than on the left. The condition does not seem to be hereditary.

The symptoms of complete obstruction are striking as the infant has great difficulty in breathing and in nursing and its nasal cavities are filled with a peculiar glairy gelatinous secretion. Additional findings are anosmia, diminished lung expansion on the affected side, an increase in the blood pressure, incontinence of urine, dyspepsia, and dry pharyngitis.

The symptoms of unilateral obstruction are less marked. The diagnosis is confirmed by the impossibility of passing a probe through the nose, by nasopharyngoscopic examination and by palpation with the finger in the nasopharynx.

The recognized method of treatment consists in making an opening through the obstruction and removing it. In the author's opinion, the posterior portion of the septum should also be removed.

GEORGE R. McAULIFF, M D

Goalwin, H A Some of the Newer Methods of X-Ray Examination of the Paranasal Sinuses, the Optic Canals, the Pharynx, and the Larynx *Laryngoscope*, 1926, XXXVI, 235

In a rather detailed discussion of some of the newer methods of examining the paranasal sinuses, the optic canals, the pharynx, and the larynx with the X ray, Goalwin calls attention to the fact that the roentgen examination of the paranasal sinuses is probably the most widely used laboratory procedure in rhinology.

He contends that the widely prevalent practice of making a diagnosis of sinus conditions from one or two roentgenograms may lead to serious error even in acute cases and is absolutely unreliable in chronic cases. The complete examination of the sinuses requires at least seven roentgenograms, a lateral, a postero-anterior, a cephalodorsoventral, a caudodorsoventral, and an axial roentgenogram and one each of the right and left optic canals.

Each sinus has a normal illumination which depends upon its depth as well as the density and thickness of its walls and those of the skull. Before a decision is made with regard to the condition of a sinus the normal illumination to be expected must be estimated. Such an estimate is made possible only by a full lateral and full postero-anterior view.

The roentgenologist should be thoroughly familiar with all of the clinical and roentgenological aspects of the disease, any deformities of the head, and needless to say, the finest details of the anatomy of the head.

In roentgenography of the optic canals great precaution is necessary. The size of the focal spot of the tube should be measured and the distance of the focal spot from the plate and of the canal from the plate should be noted.

The size of the optic canal cannot be determined directly from the film. It must be calculated.

The roentgenologist's duty does not end when he makes a diagnosis. He should furnish the clinician with all of the anatomical data which can be determined from the roentgenograms as these will be of aid in the treatment. A R. HOLLENDER, M D

Dean, L W The Diagnosis and Treatment of Paranasal Sinus Infections in Infants and Young Children Under Ethylene Anæsthesia *Laryngoscope* 1926, XXXVI, 257

In Dean's experience sinus disease in infants and young children which is associated with severe systemic conditions such as arthritis, chorea and nephritis has been slow to yield to treatment. Little difficulty has been encountered in diagnosing chronic sinus infection, but eradication of the last trace of the sinus disease has been less simple.

Irrigation of the maxillary sinuses is best accomplished under ethylene anæsthesia.

The diagnosis of sinus disease in infants and young children is facilitated by ethylene anæsthesia. For operations on the nose or sinuses, chloroform and oxygen are preferred because, when they are

employed the field is much less bloody and electrically driven suction machines may be used in the operating room with safety.

Dean now uses a new technique in investigating the maxillary sinuses. Instead of inserting a long needle through the trocar that has been passed into the sinus he attaches a syringe directly to the trocar and injects sterile normal salt solution into the sinus and aspirates it through the trocar. The trocar has an interior diameter three times that of the needle formerly used therefore larger pieces of pus and thicker pus may be aspirated. The technique described obviates the danger of injuring the sinus wall by a second needle which as originally used projected beyond the end of the trocar.

The material aspirated is examined macroscopically for pus and sent to the laboratory for microscopic examination and culture.

A R HOLLENDER MD

Lodge W O Observations on the Frontal Sinus  
*Brit M J* 1926 1 60

During quiet intervals in recurrent catarrhal inflammation a diagnosis is difficult as the nasal chambers appear healthy transillumination is of no help and roentgenograms are negative. Hence most reliance must be placed on the history.

The continued use of an oily spray containing methol chloretone etc may ward off an attack and during an attack the introduction beneath the middle turbinate of cotton pledgets wet with cocaine and adrenalin may give relief. Resection of the anterior portion of the middle turbinate with or without probing and dilatation of the duct yields more consistently satisfactory results.

Mucocele is less frequent in the frontal sinus than in the other sinuses. Its development is favored by closure of the outlet and the absence of pyogenic organisms. Surgery is the treatment indicated.

Empyema is due to ascending infection from the nose resulting from trauma influenza the presence of foreign bodies or ethmoid suppuration. In this condition also surgery is indicated.

Among miscellaneous affections discussed are tuberculosis of the frontal bone gummatous periostitis sarcoma and osteoma.

GEORGE K. McVILIFF MD

Schreiner B F A Report on Fifty Four Cases of Malignant Neoplasms of the Antrum of Highmore  
*Arch Clin Cancer Research* 1925 1 65

Schreiner reports on fifty four cases of tumor of the antrum of Highmore on forty one of which a biopsy was performed. Thirty three of the neoplasms were classified as epitheliomata three as spindle cell sarcomata three as myxosarcomata and two as giant cell sarcomata. The remaining thirteen which were not examined by biopsy were clinically malignant.

In the period from 1914 to 1920 the treatment usually consisted in the surgical removal of as much of the tumor as possible. In one case treated in

June, 1916 resection of the superior maxilla was done and followed by the introduction of radium into the cavity of the antrum and the application of low voltage X rays from the outside. This patient has been clinically well since November 1916.

Since 1920 the practice has been varied. In many cases the implantation of bare tubes into the tumor mass in the antrum has been done through the mouth and in some instances directly through the hard palate which was eroded. The remaining cases have been treated by the insertion of radium seeds or radium tubes filtered through mm of brass and 1 mm of rubber through an opening made above the alveolar process. While in all of the cases treated up to 1920 the radium application was supplemented by low voltage X rays applied from the outside or by radium packs at a distance of 6 cm more recently high voltage X ray treatment divided over a period of from ten to twelve days has been used in the cases in which radium seeds have been implanted or radium tubes applied. It has often been necessary to remove sequestra weeks or months following the treatment.

The results are summarized as follows:

1 Five patients who had an epithelioma of the antrum of Highmore have been clinically well for periods ranging from six months to nine years.

2 Two patients treated for giant cell sarcoma of the antrum are clinically well eight and one half years and five years respectively after radical surgery and radiation.

3 Of the three patients with spindle cell sarcoma one has had relief for a year but the two others show no improvement.

4 The three patients with myxosarcoma failed to respond to treatment and died.

5 When the disease has metastasized to the regional lymph nodes improvement has only been temporary.

A R HOLLENDER MD

## MOUTH

Regrad C Radium Therapy in Cancer of the Tongue and Secondary Involvement of the Lymph Nodes (Ueber die Radiumtherapie der Zungenkrebe und ihrer sekundären Druesenerkrankungen) *Strahlentherapie* 1925 vii 73

The author reports upon the results of radium irradiation in 174 cases of cancer of the tongue which were treated at the Radium Institute of the University of Paris in the period from 1920 to 1931. A clinical cure i.e. disappearance of the local tongue affection was obtained in eighty-one cases (46.5 per cent) but in thirty nine of these death resulted from metastases in the lymph nodes. At the Cancer Congress at Strassburg in 1923 the author reported upon the twenty four cured cases which were irradiated in 1920 and 1921. Since in the meantime there has been only one death from recurrence of the cancer he considers it justifiable to regard as permanent cures the newly published cases. Cures were obtained more frequently in

carcinoma of the anterior portion of the dorsum of the tongue than in those of the posterior portion

When the ulcer is very small the diagnosis not entirely certain and the excision of a specimen would be equal to total extirpation of the lesion the treatment should be surgical. Other cases come within the scope of radium treatment

Following a brief description of the most effective method of treating with radium the author discusses the metastases in the lymph nodes. Whereas for the primary tumor he prefers radium puncture with  $\frac{1}{2}$  mm platinum needles he states that this procedure has not stood the test in the treatment of metastases in the lymph nodes. Whenever possible, he does an extirpation and follows it by irradiation as he sees in the great volume of tumors of the lymph nodes a cause for the failure of the radium therapy. Only when operation is impossible with out laying open the carcinomatous area does he give radium treatment alone

When lymph node involvement is not evident prophylactic irradiation is necessary only in cancer of the base of the tongue. In carcinoma of the posterior portion of the dorsum radium gives very poor results therefore the author prefers roentgen ray irradiation for this condition. **BERNSTEIN (Z)**

### PHARYNX

**Mosher, H P** Exostoses of the Cervical Vertebrae as a Cause of Difficulty in Swallowing. *Laryngoscope* 1926 xxxvi 181

**Orton H B** Anterior Dislocation of the Atlas as a Cause of Inability to Swallow Solid Foods. *Laryngoscope* 1926 xxxvi 183

**MOSHER** reports two cases of exostosis of the cervical vertebrae causing difficulty in swallowing. In the first case, that of a woman of 74 years the X ray showed exostoses of the bodies of the fifth and sixth vertebrae while in the second that of a young woman, it revealed exostoses of the bodies of the sixth and seventh vertebrae

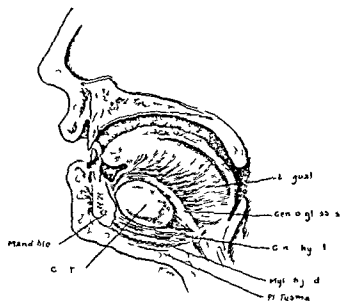
**ORTON** cites the case of a child of 3 years who regurgitated or expectorated all solid foods as soon as they were given. The child had not been delivered with instruments, but it was claimed that the attendant in awaiting the arrival of the doctor retarded the birth of its head. The child was 11 months old before he was able to sit up and 7 or 8 months old before he was able to hold up his head. X ray examination revealed an anterior dislocation of the atlas. The author reports the case because of the infrequency of this condition as a cause of difficulty in swallowing

**GEORGE R McCLIFF M D**

### NECK

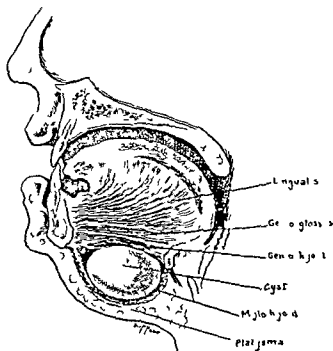
**Ellison F L** Inclusion Cysts of the Hyomandibular Region. *Thyroid* 1916 l 238

The author gives the embryology of inclusion cysts of the hyomandibular region. The first branchial



**FIG. 1** The sublingual type of cyst occurring above the geniohyoid muscle

chial cleft locates cysts that appear in the aural, submaxillary, sublingual and submental regions. The lining of such cysts reproduces the structure of the ectoderm or endoderm. If the external groove fails to become entirely obliterated and closes only at the external surface an inclusion cyst will be the result. This cyst will be laterally placed and lined with epidermis. If it ruptures externally or is opened a branchial sinus (not fistula) results. These cysts have a thick, tough wall composed of all the skin



**Fig** The submental type of cyst. Note the geniohyoid muscle above and the mylohyoid muscle below

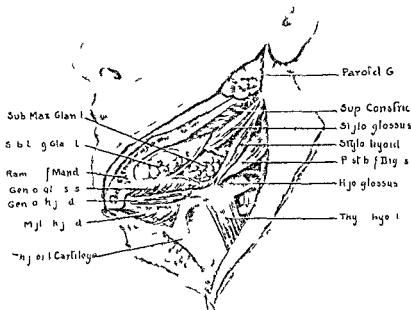


Fig. 3 The anatomical structures with which the development of the hyoman dibular cleft is concerned

layers and contain the products of skin activity namely sebaceous matter hair and desquamated epithelium

If the ventral or inner groove fails to unite entirely a pharyngeal diverticulum results. If it unites only on the pharyngeal surface a branchial inclusion cyst is formed. The lining of this type of cyst is of endodermic origin and is composed of mucous membrane with a basement layer of columnar epithelium.

These cysts have a thin friable wall and contain a mucoid substance. Lymphoid tissue is abundant and striated muscle, mucous glands and islands of cartilage may be found.

Sublingual cysts or midline cysts come from the ectoderm of the first branchial arch and lie at the base of the tongue above the geniohyoid muscle or between it and the mylohyoid muscle.

The clinical symptoms of inclusion cysts depend upon the position of the cyst. The mass causes a sense of fullness rather than true pain. Cysts of the auricular type appear just below and in front of the ear while those of the submaxillary type appear as gradually increasing swellings between the angle of the jaw and the hyoid bone. The sublingual type of cyst appears just beneath the mucous membrane of the floor of the mouth. Cysts of the submental type cause no inconvenience but are extremely unsightly.

The author reports five cases of inclusion cysts in the hyomandibular region.

HOWARD A. McKNIGHT, M.D.

**Beykirch, A.** A Discussion of the Clinical Aspects and Histology of Struma and Their Relationship to One Another on the Basis of the Struma Material in Goettingen 1922-1924 (Klinik und Histologie der Struma in ihrem Verhältniss zu einander kritisch bewertet an Hand des Goettinger Strumamaterials 1922-1924). *Beitr. z. klin. Chir.* 1925, cxxxv, 163.

The author reviews the clinical syndrome and the histology of 185 cases of struma. The large follicular proliferating forms of struma are very common in Goettingen. Most of the subjects are at the age of puberty. All of the other forms occur at a more advanced period of life. Frequently a mixed form with large and small follicles is seen.

In the choice of treatment (iodine treatment or operation) the clinical symptoms particularly those of hyperthyroidism must be taken into consideration. The clinical symptoms of proliferating struma are sometimes due to mechanical causes and at other times to functional disturbances (hyperthyroidism). At the age of puberty iodine treatment must therefore be given only with great care. Operative procedures result with certainty in a reduction in the size of the gland without functional disturbances.

The Basedow struma and nodular struma belong to a more advanced period of life. In these types hyperthyroidism is less frequent. Everything indicates that hyperthyroidism is by no means entirely dependent upon the thyroid gland; other factors are involved. All in all the hereditary goiter Anlage and the constitution and age of the struma

are of importance. Struma is responsible for a large number of syndromes and as regards its functional manifestations should be judged only from the complete picture presented in the particular case.

Koch (Z)

**Aleman O** Two Cases of Anterior Mediastinotomy for Struma Intrathorax *Acta chirurg Scand* 1926 1v 135

The author reports two cases of intrathoracic struma with well marked symptoms of compression of the mediastinal organs. In both, the extirpation of the struma by the Sauerbruch-Schumacher anterior longitudinal mediastinotomy was followed by a good result.

**Clute H M**, and **Mason R L** The Medical Treatment of Hyperthyroidism *Ann Clin Med* 1926 1v 673

While it is generally admitted that the removal of part of the thyroid gland is the safest, surest and quickest method of checking the course of hyperthyroidism, the authors emphasize the importance of intensive medical treatment before and after thyroidectomy. The high metabolic rate is best treated with rest. As persons with exophthalmic goiter do not adjust themselves readily to rest in bed they must be persuaded to control their ceaseless wasteful movements and excited conversation.

Next in importance to rest is diet. It has been estimated that a man with a metabolic rate of 50+ who is doing a moderate amount of muscular work requires 6000 calories daily to maintain his weight. To furnish a diet of from 3000 to 6000 calories daily the patient should be given his favorite foods.

Iodine is the only drug of demonstrated merit tending to reduce the basal metabolic rate in hyperthyroidism. It should not be given in cases of adenoma.

A very troublesome sequela of hyperthyroidism is auricular fibrillation. In the authors' clinic this condition has been found in about 35 per cent of the definitely toxic patients. Hamilton states that paroxysmal attacks of auricular fibrillation associated with thyroid toxicity cease permanently when the toxicity is corrected. This is true only of the purely thyroid heart and not of long established cardiac conditions. **ARTHUR L. SHREFFLER, M.D.**

**Musser J H** Exophthalmic Goiter and Tuberculosis *Ann Clin Med* 1926 1v 620

Primary tuberculosis of the thyroid gland is very rare after puberty. Thyroid tuberculosis is secondary to pulmonary tuberculosis. Tuberculosis is more frequently mistaken for hyperthyroidism than hyperthyroidism for tuberculosis. The author has seen six cases of tuberculosis which had been treated for hyperthyroidism. Symptoms common to both conditions are a loss of weight, fatigue, debility, nervousness and diarrhoea. Anorexia is usually absent in hyperthyroidism but present in tuberculosis.

Hyperthyroidism is characterized by marked over action of the heart, a pronounced vasodilatation, an increase in the metabolic rate, and a marked increase in the pulse pressure. In tuberculosis the pulse pressure is usually low and the temperature usually rises daily. In the diagnosis of tuberculosis the von Pirquet test is very valuable and the presence of crackling rales with granular breathing is suggestive. **ARTHUR L. SHREFFLER, M.D.**

**Koopman, J** Conjugal and Luetic Basedow's Disease (Ueber konjugale undluetische Basedowsche Krankheit) *Wien klin Wchnschr* 1925 **xxviii** 1759

The occurrence of the same disease (cancer diabetes etc.) in both husband and wife is so seldom observed that no conclusion can be drawn from it. Nevertheless the author regards the case of conjugal Basedow's disease which he reports in this article as of importance because of the rarity of the condition in both husband and wife and because it affords an insight into the pathogenesis of certain cases.

Koopman defends the not new but apparently little known theory of the occurrence of a luetic Basedow's disease. This theory has received most attention in the French literature. According to Leonard 30 per cent of cases of Basedow's disease are of luetic origin. It may appear very early after the syphilitic infection (three months) or very late (twenty three years). Tabes and hereditary lues may also cause it. Therefore the Wassermann test should be made in every case of Basedow's disease.

In cases of luetic origin iodine has often an astonishing effect. Luetic Basedow's disease can be quickly cured. **HIRSCH (Z)**

**Brodersen N H** Tetany Following Operations on the Thyroid Gland (Tetanie nach Operationen an der Schilddrüse) *Norsk Mag f Lægevidensk*, 1925 **lxxxvi** 193

In the period from January 1 1920 to June 30 1925 647 thyroidectomies were performed at the City Hospital of Drammen. Tetany occurred in five cases. In the 301 cases in which the operation was performed for exophthalmic goiter or adenomatous goiter with hyperthyroidism tetany occurred in four (1.3 per cent), while in the 346 in which it was done for simple goiter tetany occurred in one 0.3 per cent. There were no deaths.

Why the tetany occurred in these cases cannot be stated with certainty. In every case in which it developed it followed a radical operation in which only a small portion of the left lobe was left behind. In a few rare cases it appears to be an unavoidable complication of the radical operation. Three of the patients whose cases are reviewed were 21, 17 and 15 years of age, a fact which possibly indicates the necessity for special care in operations on young persons. The chief remedy against tetany is calcium lactate. Parathyroid tablets are not at all certain in their effect. **KORITZINSKY (Z)**

**Lahey F H** The Transplantation of Parathyroids in Partial Thyroidectomy *Surg Gynec & Obst* 1926 xlii 508

Since parathyroids are occasionally removed at operation and identified in the laboratory, they should be carefully searched for in the specimen removed at operation and if found transplanted.

The most convenient site at which to transplant them is the belly of the sternomastoid muscle. Care must be taken to see that the cavity into which they are transplanted is dry. **JAMES C BRASWELL M D**

**Simpson W M** A Clinical and Pathological Study of Fifty Five Malignant Neoplasms of the Thyroid Gland *Ann Clin Med* 1926 iv 643

Simpson presents a report on fifty five malignant neoplasms of the thyroid gland, fifty of which were carcinoma and five sarcomata. The cases in which these tumors were found constituted 4.03 per cent of a surgical series of 1,290 cases of non-exophthalmic

goiter. No malignancy was found in purely exophthalmic goiters. Seventy two per cent of the malignant tumors occurred in women. Sixty per cent were unsuspected before the histological examination.

Every hard nodule in the thyroid of a person over 30 years of age should be viewed with suspicion, especially if there is a history of relatively rapid increase in the size and hardness of a previously quiescent goiter. In the advanced stages metastasis to the lungs and bones is common.

In 30 per cent of the cases reviewed by the author the carcinoma was of the medullary type. Tumors of this type grow with the greatest rapidity and frequently recur and form metastases. In 60 per cent of the cases the tumor was an adenocarcinoma and in 4 per cent of the scirrhous type. Sarcoma of the thyroid conforms in its growth characteristics to sarcoma arising elsewhere in the body.

**ARTHUR L. SHREFFLER M D**

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS, CRANIAL NERVES

Pauli W E and von Redwitz E Remarks on the Construction and Use of the Meyer Schlueter Sound (Bemerkungen zur Konstruktion und Verwendung der Meyer Schlueterschen Sonde) *Deutsche Zeitschr f Chir* 1925 cxciii 343

Pauli and von Redwitz recommend the sound devised by Meyer and Schlueter for measuring the electrical resistance of brain tissue in operations on brain tumors. According to their own experience in several cases and according to reports from America it is often of great value.

The authors have changed its construction so that the electrodes may be moved toward each other and it is possible by moving them to determine the extent of a tumor and to discover very small tumors. By the use of a head piece the operator himself can determine the resistance of the tissues during the performance of an operation.

VON REDWITZ (Z)

Von Sarbó A A Cured Case of Fat Embolism of the Brain Following Fracture of the Leg and Simulating Progressive Paralysis (Ein geheilter Fall von Fettembolie des Gehirns nach Unterschenkelbruch im Bilde der progressiven Paralyse verlaufend) *Klin Wchenschr* 1925 iv 1918

The most important sign differentiating cerebral fat embolism following fracture of a bone from other cerebral conditions is the free interval between the injury and the appearance of the cerebral symptoms. Usually signs of fat embolism of the pulmonary capillaries such as a sticking sensation in the chest, shortness of breath, and cough, occur first and from several hours to several days after the fracture there is complete loss of consciousness which occurs suddenly or is preceded by a stage of sleepiness. After severe symptoms of irritation the most varied focal symptoms may be noted.

The author reports a case of fat embolism of the brain following a complicated fracture of the leg in a man 56 years of age. The symptoms corresponded to those of progressive paralysis except that the negative result of the serological and spinal fluid examinations excluded parenchymatous syphilis. Undoubtedly the frontal and parietal lobes were chiefly affected by the embolism. Such an assumption explains the facial paralysis on the left side (focus on the right side in the anterior central gyrus), paralaxia (supramarginal gyrus), the pararthria syllabaris, the verberigation (third frontal gyrus) and the ultimate disturbance of the total function of the frontal lobes, the disorientation for place and time and the tendency of the patient to

play clownish tricks. In the course of two months the symptoms slowly receded and a complete mental recovery resulted. LEHRNBECHER (Z)

Davis, L The Influence of Decompression Operations on Experimentally Produced Papilloedema *Arch Surg* 1926 xiii 1004

In a large series of dogs Davis produced a most ingenious imitation cerebral tumor by introducing sterile 2 gr capsules of agar into various portions of the cerebrum and cerebellum through small burr holes. When a subtemporal or suboccipital decompression was done immediately before or after the introduction of the agar, the animals did not develop papilloedema, and survived the operation for several weeks until they were sacrificed, whereas when decompression was not done they died within a few days.

In the case of "tumors" of the cerebellum, the subtemporal decompression appeared to be quite as effective in preventing symptoms as the subtentorial decompression. The author questions the correctness of the current opinion that supratentorial decompression is of no value in cases of subtentorial tumor.

This study indicates that decompression will alleviate choked disk in cases of tumors of the brain. Davis states expressly, however, that he does not favor a palliative decompression if it is possible to localize and attack the original lesion.

TRACY J PUTNAM M D

Winkelbauer A and Brunner, H The Treatment of Traumatic Frontal Brain Abscesses (Zur Behandlung der traumatischen Stirnhirnabscesse) *Arch f klin Chir* 1925 cxxvii 160

Seven cases of frontal brain abscesses are reported. The abscess was correctly diagnosed in five. Psychic changes are of great aid in the diagnosis. They were noted in four of the authors' cases. They consisted in a tendency to play clownish tricks, a loss of ethical sense, stupor, somnolence and a decrease in the perceptive powers. In four cases the diagnosis was further supported by very severe headaches and tenderness to percussion over the frontal bone.

The temperature and cerebrospinal fluid are not very characteristic. Dizziness and vomiting (a long time after the accident) occurred in only one of the authors' seven cases. The ophthalmoscopic findings are of greater significance. Papilloedema was found twice in five cases. In the authors' opinion the most reliable signs are the nature and site of the injury and the psychic changes.

The success of operative treatment depends upon an early diagnosis. If the abscess is not recognized



the formation of pachymen bodies. The proliferation of arachnoid takes place at weak spots in the dura particularly preformed openings such as those for the passage of the vessels. It is difficult to determine the cause of this proliferation. In one of the author's cases a purulent otitis was present.

As the patients were all old persons it is probable that there were mild processes of inflammation or irritation of the meninges, congestion, stasis and temporary changes in spinal fluid pressure, but proliferation of the arachnoid alone could not cause the pseudo cyst. The orifice through which the arachnoid passes is plugged by it and spinal fluid cannot pass through it at least not with sufficient force to distend the dura mater. However when a vessel passes through the opening there may be enough space for the passage of spinal fluid especially when the size of the vessel is changed. The passage of spinal fluid is facilitated by obliquity of the course of the vessel. In the cases reported this was marked. Changes in the pressure of the spinal fluid also are of influence in the production of these cysts.

None of the cysts reported had caused any symptoms. This is not surprising as such cysts grow slowly and do not cause signs of compression because they are in communication with the intra arachnoid space. Even when they are completely developed they do not crowd the epidural space because there is a limit to the capacity of the dura mater for expansion. Moreover their elongated form makes them readily adaptable to the intra vertebral space. AUDREY G. MORGAN, M.D.

**Landellus E. Experiences with Some Spinal Intradural Tumors.** *Acta chirurg. Scand.* 1926, ix, 180.

In one case of intradural neuroma affecting the posterior nerve roots and one case of intramedullary tumor the author produced root pain in the locality of the spontaneous pains by increasing the cranial pressure during lumbar puncture by the Queckenstedt test, viz. compression of the veins in the neck.

In the first case the only symptoms were root pains and the segment diagnosis was made altogether from the localization of the pains after their nature and localization had been corroborated by the Queckenstedt test.

The author suggests that this observation may prove of value in the diagnosis of spinal intradural tumors at an early stage before the development of paraplegia.

### PERIPHERAL NERVES

**Felix Willy. Exeresis of the Phrenic Nerve in Pulmonary Affections.** (Die Phrenicus Ausschaltung bei Lungenerkrankungen.) *Ergbn d. Chir u. Orthop.* 1925, viii, 690.

This article is a review of the most important facts concerning the history, anatomy and technique of artificial paralysis of the diaphragm. The

author discusses the priority of von Goetze. In 1914 Friedrich recommended an approach to the dome of the pleura in order to reach deep afferent fibers of the nerve. Karchn in 1920 recommended disruption of the nerve if possible below its cervical roots. The suggestion of Walthr Felix made at about the same time to approach the subclavian vein in order to disrupt the accessory phrenic lies also within the realm of technical possibility. If the scalenus anticus muscle is followed downward it is usually possible to reach well down to the vein. Pulling upward on the nerve stem may move the accessory phrenic which passes in front of the vein and thus identify it for division.

With full knowledge of the so-called radical phrenicotomy of von Goetze the work of Felix was completed in 1922 and contains the results of his research conducted after 1919 on the anatomical, experimental and clinical aspects of the phrenic nerve and exeresis of this nerve. Up to 1923 von Goetze described his method as phrenicotomy plus division of the subclavius. On anatomical grounds the staff of the Munich clinic have been unable to recognize this procedure as radical and have repeatedly expressed this viewpoint. It does not take into account the frequent variations of the phrenic on the other side of the subclavian nerve. Only since this criticism from the Munich clinic has von Goetze presented his procedure with a changed technique (Surgical Congress of 1924).

The method he uses today is truly radical since he now divides not only the subclavian nerve but also other nerve branches which lie in the vicinity and follow a similar course (von Goetze's subclavian accessory roots). All argument as to priority is groundless since methods for the complete division of the phrenic were known before either the Felix or the von Goetze method appeared. It is emphasized that the operation though simple is associated with considerable danger because it is frequently performed by poor surgeons. One of Friedrich's patients died from air embolism in the internal jugular vein. In the Munich clinic there were two cases of air embolism with a favorable outcome. Sauerbruch mentions among a total of 500 operations two fatal hemorrhages due to a simple phrenicotomy. Mistakes have been made repeatedly in the identification of the nerve. At the Munich clinic the sympathetic was divided once with a consequent Horner syndrome. The Sauerbruch clinic has received reports of seven injuries of the vagus—one caused by a skilled surgeon—an injury of the thoracic longus nerve with partial paralysis of the serratus anticus muscle and an injury of the thoracic duct and the oesophagus.

At the Munich and Zurich clinics there have been performed to date 250 phrenicotomies and exereses. In no instance has there been any hemorrhage which could be ascribed to the twisting out of the nerve. Neither has the operation ever been followed by the bursting of a lung abscess or the development of a pneumothorax as reported by von Goetze.

Both procedures for artificial paralysis of the diaphragm—von Goetze's operation and the exeresis—are effective but exeresis is technically more simple.

According to the findings of investigations made to date the effect of the permanent paralysis of the diaphragm on the function of important abdominal and thoracic organs is quite harmless. The contention of the Sauerbruch school that phrenicotomy in general cannot be admitted to have an independent importance in the compression therapy of pulmonary tuberculosis is held to be correct contrary to the opinions of von Goetz and Frisch. In sixty cases treated by phrenicotomy alone at the Munich clinic the operation was followed by rapid clinical improvement, but actual healing did not occur in any instance. Complete disappearance of a cavity as seen by von Goetze is very rare and should not influence the general prognosis. At the Munich clinic the occasional arrest of expectoration with considerable diminution in the size of small cavities subsequent to paralysis of the diaphragm is ascribed to the mechanical displacement or obstruction of the cavity outlet.

On the basis of his experience at the Munich clinic during the past ten years the author regards as of no importance the injuries supposed by Brauer to occur after permanent paralysis of the diaphragm in pulmonary conditions. Exeresis is contra indicated, however, by severe cardiac pains. Whether long continued tachycardia which has been noted occasionally after exeresis (in Munich, two or three times in 250 cases) is to be ascribed to the twisting out of the nerve or to the high position of the diaphragm, is still undetermined. The author believes the latter is responsible. Emphysematous rigidity of the thorax is also a contra indication. The danger of spreading pus into the mediastinum by pulling the nerve out in the presence of a tuberculous empyema is not to be feared if force is avoided. In several cases of bronchiectasis treated by artificial paralysis of the diaphragm at the Munich clinic decided improvement resulted but was only temporary. GRAF (Z)

Gergely, J. and Markovits S. Clinical Lessons from 100 Operations on the Phrenic Nerve (Die klinischen Lehren aus 100 Phrenicus Operationen). *Gyógyásd* at 1925 LXI, 922

Exeresis of the phrenic nerve gives the best results in cases with the indications for pneumothorax that is cases with a free thoracic cavity, a freely movable diaphragm and focal propagating and for the most part exudative caseous pulmonary processes. In cases of basal or bilateral disease its results are less favorable.

The curative effect of the procedure is due not only to compression but also to immobilization and the elimination of unilateral traction. It gives very excellent results when it is carried out simultaneously with artificial pneumothorax. Permanence of the pneumothorax is assured by it.

In cases of non tuberculous processes of the lower lobe (abscess bronchiectasis), it causes only symptomatic improvement at the most. In empyema, it considerably reduces the size of the cavity.

Of eighty nine cases in which exeresis of the phrenic nerve was done forty eight showed a good result sixteen, symptomatic improvement nine no change and four an aggravation of the condition. Twelve patients died. MAKAI (Z)

## SYMPATHETIC NERVES

Mandl F. The Effect of Paravertebral Injections in Angina Pectoris (Die Wirkung der paravertebralen Injektion bei Angina pectoris). *Arch f klin Chir* 1925 CXXXI 495

Following a brief discussion of the syndrome of angina pectoris and the various theories as to the cause of the condition the author reports sixteen cases in which he made paravertebral injections of  $\frac{1}{2}$  per cent novocain or  $\frac{1}{4}$  per cent tutocaine solutions. The injections were made from the first to the fourth dorsal vertebrae or at one or two of these points and 15 c cm. of the solution were injected at each point. No adrenalin was added to the solution.

In twelve cases good results were obtained and in six of these the effect has been lasting. These results justify the inclusion of paravertebral injections among the therapeutic measures employed for angina pectoris. However the injections are recommended only for cases in which medical measures have failed.

The effect of the injections depends upon the exclusion of the sympathetic paths the sensory supply of the heart and aorta. The author does not state whether the parasympathetic paths are also interrupted. The long continued effect of a single paravertebral injection (the injection was repeated in only one case) Mandl explains by the assumption that the interruption of the sensory paths produced a marked disturbance in the interplay between the sympathetic and parasympathetics. The failure of the treatment in some cases he attributes to the choice of the wrong segment for the injection or the use of a faulty technique. In conclusion he states that when care is taken the procedure is without danger. STAHL (Z)

Melzner E. An Experimental Contribution on the So called Periarterial Sympathectomy (Experimenteller Beitrag zur sogenannten periarterellen Sympathektomie). *Arch f klin Chir* 1925, CXXXI 427

Following a periarterial sympathectomy on the renal artery of a dog the author was unable to find in the kidney the slightest microscopic evidence of change. The examinations covered a period of from three to seventy days following the operation. The kidney with its extremely sensitive tissues remained practically unaffected by the apparently very marked changes in the peripheral circulation caused by the periarterial sympathectomy. Melzner says

How much less an effect can be expected in the extremities whose tissues have a so much grosser anatomical structure' He believes that his experiments prove again that the innervation of the blood vessels is segmental

STARL (2)

### MISCELLANEOUS

Polissadowa V Restoration of Innervation in Skin Transplants (Ueber die Wiederherstellung der Innervation bei Hauttransplantationen) *Zentralbl f Chr* 1925 in 2166

The author made clinical studies with regard to the restoration of innervation in twenty cases of skin transplantation. In most of them a rhinoplastic operation with the use of a pedunculated flap had been done. Previous to its separation the flap retained sensibility only in the vicinity of its pedicle and immediately after its separation it lost all sensibility. The first sensations to be noted after the transplantation were those of touch in response to pin pricking. Pain was felt only after a month. Sensibility began at the periphery of the flap adjacent to normal tissue and progressed slowly toward the center at the rate of about 0.5 to 1.0 cm per month. Sensitiveness to temperature was the last to be noted.

In addition the author made histological investigations in a large number of cases with regard to the presence of nerve elements. He found that the growth of nerves runs about parallel with the in-

crease in sensibility. Even after a long time the flap had very few nerve fibers as compared with normal skin. Medullary nerve fibers were found in only one case and nerve end apparatus were not demonstrable even at the end of a year.

VOLLHARDT (21)

Boyd W Three Tumors Arising from Neuroblasts *Arch Surg* 1926 xii 1031

Three cases of tumor in children are reported. In the first case the origin of the neoplasm appeared to be in the medulla of both suprarenals and there were metastases in the liver, lymph glands, ribs and cranium. The tumor was composed mainly of well differentiated cells together with small more primitive cells and bundles of neurofibrils but without rosettes.

In the second case there was a ganglioneuroma arising in the ganglia of the left abdominal sympathetic chain and associated with metastases in the ribs and cranium and maldevelopment of the left suprarenal medulla.

In the third case a neuroepithelioma of the retina had metastasized to the liver and other viscera.

All three neoplasms may be regarded as developmental tumors arising from neuroblasts at different stages of development. The first two spread apparently by way of the lymphatics and the third by the bloodstream. In all the striking metastases were in the cranium.

TRACY J PERHAM MD

# SURGERY OF THE CHEST

## TRACHEA, LUNGS, AND PLEURA

Guy, J. and Elder, H C Radiographic Exploration of Broncho Pulmonary System by Means of Lipiodol *Edinburgh M J* 19 6 n 5 xxxiii 269

For roentgenographic exploration of the broncho pulmonary system the authors inject lipiodol by the intercrithyroid route following preliminary anasthetization of the parts. They then guide the lipiodol into the portion of lung to be studied by having the patient assume the most favorable position therefor.

Fluoroscopy is used to ascertain whether this has been accomplished, and roentgenograms are made as quickly after the injection as possible. Such complications as have occurred have been of little consequence. In the authors' opinion the results justify wide application of the method in the diagnosis of bronchopulmonary affections.

ADOLPH HARTUNG, M D

Clerf L H Foreign Bodies in the Tracheobronchial Tree. A Report of Cases in Which Bronchoscopy Was Not Done *Laryngoscope* 1926 xxxvi 206

The author discusses the probability of the spontaneous expulsion of a foreign body from the tracheobronchial tree. He states that before the use of the X ray statistics which showed the incidence of such expulsion to be 46 per cent were misleading because expulsion was then one of the chief indications of a foreign body. Jackson estimates the incidence of spontaneous expulsion as between 2 and 3 per cent.

Clerf advises against inversion of the patient because of the danger that the foreign body may become lodged in the glottis and produce asphyxiation.

He mentions the many bends in the bronchial tree, its entrance narrowed by the glottic chink, tracheal reflexion tending to close the glottis and the force of gravity and anatomical and physiological factors working against spontaneous expulsion.

The probability of spontaneous expulsion is influenced also by the nature of the foreign body. Theoretically, sharp elongated bodies will never be coughed up. They usually lie point uppermost and offer little surface to the expiratory blast. Heavy metallic objects especially if round tend to seek lower portions of the tree and to block the bronchus. Peripheral to them air is absorbed and a negative pressure is produced. Proximally, a ring of inflammatory tissue holds them down. Expulsion of vegetable substances is rare probably because of the swelling of the glottis caused by their ten-

dency to lodge in the subglottic space and because of the large quantity of secretion caused by the septic bronchitis and laryngeal spasm. The longer a foreign body has been in place the less the probability that it will be coughed up.

Instances of the spontaneous expulsion of practically every type of foreign body are cited, but Clerf emphasizes the fact that these are exceptions and advises strongly against waiting for such expulsion. In conclusion he quotes Jackson as follows:

'We do full justice to our patients when we tell them that while the foreign body may be coughed up it is very dangerous to wait, and further, that the difficulty of removal increases with each hour the body is allowed to remain.'

JEROME R. HEAD, M D

Clerf L H Bronchoscopic Aids in Thoracic Surgery *Surg Clin N Am*, 1926 vi 281

Clerf states that bronchoscopy, while of great value in the treatment of acute suppuration in the upper and middle lobes of the lung, cannot take the place of surgery in the treatment of chronic suppuration with extensive bronchial dilatation and fibrosis or large abscess cavities situated peripherally.

He reports the case of a 17 year old girl with a history of chronic coughing and the expectoration of from 40 to 90 cc daily of thick purulent sputum. The pathological changes were limited to the right lower lobe. Weekly aspirations resulted in a decrease in the amount of sputum and relieved the fetid odor. Pneumography showed marked contraction of the lower right lobe and marked dilatation of the bronchi down to the terminal ends, little parenchymatous tissue remaining. The patient's general condition has now improved to such an extent that surgical intervention is feasible.

Clerf reports also the case of a 33 year old man with cough, fever, and profuse expectoration due to pathological changes in the right lung. Aspiration has been done six times. The first bronchoscopic examination showed pus coming from the orifices of all three lobes of the lung. After three aspirations the upper lobe remained clear and the condition of the middle lobe was improved, but the amount of pus remained the same and the loss of weight continued. Pneumography revealed a rather large cavity in the distribution of the posterior branches of the right lower lobe and involvement of a considerable portion of the middle lobe. As this collection of pus is not favorably situated for spontaneous drainage through the natural passages, external surgery will be necessary.

Pneumography is a very valuable aid in the localization of a pus collection and the determination of its extent.

IRA FRANK, M D

Dworatzky J P Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis and Its Effects on the Larynx *Ann Otol Rhinol & Laryngol* 1926 xxxv 42

The author observed that none of his patients with pulmonary tuberculosis who were treated by artificial pneumothorax developed laryngeal tuberculosis and that pre-existent laryngeal lesions were either cured or benefited by the collapse of the lung. In contrast to this finding he and others have observed that approximately 25 per cent of persons with pulmonary tuberculosis who are not treated by artificial pneumothorax develop laryngeal tuberculosis.

As he was unable to discover any statistics in the literature the author wrote letters to numerous authorities inquiring as to their observations on this matter. In this way he collected a series of 1592 uncomplicated cases treated by artificial pneumothorax. Laryngeal involvement developed in only four. He obtained also reports on thirty-two patients with pulmonary tuberculosis complicated by laryngeal tuberculosis who were similarly treated. Of these twenty-six showed improvement of both the pulmonary and the laryngeal lesion; two died and in four the condition remained stationary.

The beneficial effect of artificial pneumothorax on laryngeal lesions is attributed to the improvement in the general condition caused by the collapse of the lung as the result of which the larynx is no longer continually bathed with bacilli-laden sputum and is relieved of the irritation caused by the cough.

JEROME R. HEAD M.D.

Feiermann J The Care of the Bronchial Stump Following Amputation of the Lung (Zur Versorgung des Bronchialstumpfes nach Lungenamputation) *Arch f klin Chir* 1925 cxxxvii 300

In thirty operations on dogs the author tested the three methods of treating the bronchial stump after amputation of the lung, namely the method of Tegel, that of Friedrich and that of Meyer. In Meyer's method the stump is crushed and ligated and then buried by peribronchial sutures similar to Lambert sutures. The author considers this method the best, but in burying the stump he uses a suture similar to the one used for the stump of the appendix which is known as a diagonal suture.

Recently in doing a resection of the lung in three dogs he divided the bronchus according to the method of Melnikoff and united the two branches end to end. The uniting sutures were peribronchial and similar to Lambert sutures. Dogs operated upon in this manner survived for almost three months whereas those operated upon by the methods previously used survived at the longest for only seven days.

In a modification of this method which has been used by Melnikoff in investigations on the cadaver the smaller bronchus is fitted into the larger one for a distance of from 1 to 1.5 cm. after the removal of the mucosa.

The author considers the problem of the care of the bronchial stump as solved experimentally, but reminds us that the condition in a healthy animal differs from that in the diseased human organism.

GLASS (Z)

Miller W S A Study of the Human Pleura Pulmonalis Its Relation to the Blebs and Bullae of Emphysema *Am J Roentgenol* 19 6 xi 399

During the past year several lungs used in studies of pulmonary tuberculosis have presented a peculiar wrinkled appearance of the pleura over more or less circular areas from 1 to 3 cm in diameter. No adhesions were attached to them. The pleura was freely movable over the underlying pulmonary substance a fact which tended to differentiate the blebs from emphysematous bullae. With a view toward explaining this finding a study was made of the pleura with special reference to the elastic fibers. It was found that in normal pleura anastomosing fibers extended between the network of elastic fibers in the walls of the alveoli and the elastic fibers within the areolar and elastic layers of the pleura whereas when a bleb was present these anastomosing fibers were ruptured and the pleura was separated from the walls of the underlying alveoli.

In the cases studied blebs were associated with a well marked emphysema. Rupture of the walls of a dilated alveolus undoubtedly allowed the air to enter the areolar tissue and dissect the pleura from the underlying lung. Its extension may be arrested where the septa marking out a secondary lobule join the pleura or it may extend over a number of secondary lobules.

During life the cavity of a bleb is filled with air. The negative pressure within the thorax causes it to project beyond the level of the surrounding pleura. With the cessation of respiration there is no longer an influx of air to keep the thin-walled space distended and when the thorax is opened at an autopsy the negative pressure becomes a positive pressure and the bleb is practically emptied of air, this giving rise to the wrinkling of the pleura which has been described.

In conclusion the author suggests that some of the annular shadows mentioned in roentgen literature may have been due to blebs.

ADOLPH HARTUNG M.D.

Carlson E. and Bunnell S Can Pleural Effusions Following Thoracotomies Be Prevented by Artificial Pneumothorax? *Arch Surg* 19 6 xii 919

The authors have found that the dog can live for a short time with considerable positive intrapleural pressure. Eventually however it succumbs to exhaustion.

Pleural effusion does not result invariably when the pleura is damaged. In fact in the authors' experiments it was difficult to discover a method of constantly producing fluid. Merely denuding the chest wall of the pleura was unsuccessful.

Even when, in addition to stripping of the pleura over a considerable area, a rib was saved longitudinally so that raw bone marrow was exposed to the aspirating effect of the negative pressure, no fluid resulted. Cauterizing by heat and then immediately curetting an extensive area of pleura produced fluid in some cases, but in others produced it in only small amounts or not at all. However, when cauterization by heat alone was resorted to, as in the last five experiments, considerable amounts of fluid resulted.

Details of the operative technique and two tables showing its results are given. The following conclusions are drawn:

1. If the artificial pneumothorax is under sufficient pressure to equal the dog's greatest inspiratory effort the aspirating effect in producing pleural effusions will be prevented. Such a pressure is plainly incompatible with life, as it prevents air from entering the lungs. If even much less pressure is used the dogs will die from interference with ventilation. The experiments indicate that not enough pressure can be used in artificial pneumothorax either to prevent or to lessen the formation of pleural effusion which so frequently jeopardizes the results following thoracotomy.

2. The old procedure of producing adhesions between the visceral and parietal pleura, which was advocated by Sauerbrück and others, gives better results. Aspiration of all the air following tight closure of the chest wall and early and repeated aspiration of any fluid formed is therefore indicated. The fixation of the visceral pleura to the thoracic wall by fine catgut sutures might assist in this process.

3. Pneumothorax favors the increase and spread of pleural infection.

4. The danger from excess of pressure of pneumothorax in healthy, normal persons with a normal mediastinum is by no means of minor importance.

CARL R. STEINKE, M.D.

## ESOPHAGUS AND MEDIASTINUM

Clerf L. H. Cicatricial Stenosis of the Esophagus  
*Surg. Clin. N. Am.*, 1916, 61, 273

A cure of cicatricial stenosis of the esophagus depends on the maintenance of nutrition and the use of a safe and effective method of dilatation. The fluoroscope, X-ray and esophagoscope should be used to differentiate the condition from malignancy, other forms of esophageal disease and aneurism. The most common cause of cicatricial stenosis is the accidental ingestion of lye. Three cases are reported.

The first was that of a 2 year old child who had swallowed lye four months before its admission to the hospital. For four days the patient had been unable to swallow his saliva. In the author's opinion, the administration of fluids by proctocolysis and hypodermoclysis, and the performance of a gastrostomy followed by diagnostic esophagoscopy

and possibly retrograde esophagoscopy bouginage should result in a cure.

The second case was that of a man 34 years of age who had had difficulty in swallowing for seven months. The Wassermann test was 4 plus. Examination revealed evidence of extensive chronic esophagitis and a tight stenosis 27 cm from the teeth. A gastrostomy was done and a string placed by retrograde esophagoscopy. Dilatation will be carried out twice weekly until a No. 30 French bougie can be drawn up readily. The patient will then be taught to swallow a woven silk bougie the size of which will be gradually increased to Size 40. As luetic strictures have a tendency to contract, the dilatation must be long continued.

The third case was that of a woman 60 years of age who drank lye five months before she was seen by the author. The X-ray showed obstruction at the level of the suprasternal notch and also 8 cm above the esophageal hiatus. As the patient's state of nutrition remained fair a gastrostomy was not performed. Peroral esophagoscopy bouginage was done at weekly intervals. The upper stricture was rapidly dilated to admit a 5 mm full lumen esophagoscope and the lower stricture dilated with flexible tip Jackson bougies. IRA FRANK, M.D.

Reinecke R. Report of an Unusually Large Diverticulum of the Esophagus Adherent to the Pleura, and Its Surgical Treatment (Seltene grosse pleura adherente Esophagusdivertikel und seine operative Behandlung). *Fortschr. a. d. Geb. d. Röntgenstrahlen* 1925, xxxii, 949.

The author reports the case of a man 44 years of age who had an unusually large diverticulum of the esophagus which penetrated deeply into the thoracic cavity. As feeding through a Witzel fistula for twelve weeks did not improve the patient's poor condition the one stage radical operation was performed. The diverticulum was approached from the right and the back. After subperiosteal resection of the ribs, an extrapleural exposure of the posterior mediastinum under positive pressure according to the method of Enderlein afforded a very good view. The thick firm diverticulum which did not contract after the separation of the adhesions was invaginated and doubly sutured over and the flap of skin muscle and soft parts then completely closed. Death occurred suddenly a day and a half later.

Autopsy revealed partial pneumothorax on the right side posteriorly adhesions between the lung and pleura and a firm hemorrhagic infarct the size of a pigeon's egg in the left lung. GRASHEYS (Z).

Melnikoff A. Dislocation of the Larynx and Trachea in the Extirpation of Tumors of the Cervical Portion of the Esophagus (Zur Frage der Larynx und Trachealdislokation bei Geschwulstextirpation in cervicalen Esophagusabschnitt). *Zentralbl. f. Chir.* 1925, lii, 2479.

Carcinoma of the upper portion of the esophagus often involves the posterior wall of the larynx and

trachea In the removal of the upper portion of the œsophagus in such cases it is necessary to resect the entire larynx and a portion of the trachea Because of the extensive mutilation caused by such a procedure the author has worked out on cadavers and dogs an operation in which by simultaneously displacing the larynx and trachea he removes only their posterior wall with the tumor The larynx and a part of the trachea therefore remain connected with the tissues and vessels of the right side of the neck

The defect is then covered with flaps of skin The lumina of the trachea œsophagus and pharynx are first sutured into the skin At a subsequent operation the larynx and trachea are replaced in their former positions and united above with the pharynx and below with the trachea This is best done at the time a plastic operation is performed to restore the œsophagus

The author hopes by this operation to preserve all the functions of the voice completely

DENCKS (Z)

#### MISCELLANEOUS

Butler P F and Habbe J E Problems in the Diagnosis and Treatment of Metastatic Tumors in the Chest *Radiology* 1926 vi 400

While metastases of malignant tumors to the abdominal organs spine and long bones may be symptomless they are more frequently associated with ascites nerve root pains or spontaneous fractures Silent metastases are probably associated more frequently with secondary new growths in the chest than with those in any other region

The majority of patients with well advanced pulmonary metastases are free from symptoms In order to avoid unnecessary and even harmful operations in such cases greater cooperation is necessary between the surgeon and radiologist

Not all cases of metastatic malignancy in the chest are suitable for radiation therapy but when indicated it usually causes marked amelioration of the symptoms and a temporary remission of the disease

STANLEY J SEEGER M D

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

Koontz A R. Experimental Results in the Use of Dead Fascia Grafts for Hernia Repair. *Ann Surg* 1926, lxxiii 573

The work of Sencert and Nageotte on the transplantation of dead tissue is reviewed. In twenty one operations on cats and dogs, Koontz used grafts of dead fascia which had been preserved in 70 per cent alcohol for from three to twenty one days. Auto-grafts, isografts, and grafts from different species were employed. The animals were sacrificed from two to seven months after the transplantation. All showed firm union between the dead graft and the living fascia and no evidence of obstruction. Microscopic examination revealed a close intermingling of fibers.

Large ventral herniae were produced in dogs and completely repaired by dead fascia grafts.

Heteroplastic grafts took just as well as homoplastic grafts.

The article contains a number of excellent illustrations. WILLIAM J. PICKETT, M.D.

Weeks A, and Brooks L. The Treatment of Acute Peritonitis. *California & West Med* 1926 xiv 622

The advisability of drainage in acute peritonitis has been discussed for many years, and although many surgeons now use it less frequently than formerly, the authors believe it is often indicated. It aids in removing the toxins and favors the evacuation of secondary abscesses through the drainage channel. Nothing should be given by mouth as it is necessary to reduce peristalsis to the minimum.

Wet dressings as hot as the skin will bear should be applied over the entire abdomen. Abdominal distention is relieved most safely by tap water enemas or colon irrigations.

It is advisable to give a sufficient quantity of opiates to relieve the pain but a quantity sufficient to keep the patient narcotized will paralyze the bowel and reduce the oxidative processes.

Gastric lavage at intervals of three or four hours is used when the intestinal contents are regurgitated into the stomach. A duodenal tube may be kept in position for some time by stripping it after it has been properly passed. By this procedure the patient can take a considerable quantity of water into the stomach. Frequent gastric lavage begun early is essential. Five per cent sodium bicarbonate and 5 per cent glucose are given by proctoclysis as a routine and the flatus is removed by colonic irrigations. If an insufficient quantity of fluids is absorbed in this way from 1,500 to 2,000 c cm of

normal salt solution are given beneath the fascia lata and 1,000 c cm of 10 per cent glucose solution are given intravenously once or twice daily.

In cases with excessive vomiting and resulting alkalosis large quantities of sodium chloride or 50 c cm of a 5 per cent calcium chloride solution are given together with 1,000 c cm of a 10 per cent glucose solution administered intravenously, and from 1,500 to 2,000 c cm of salt solution are injected into the muscles, the bicarbonate solution then being omitted from the proctoclysis.

It is necessary in these cases to keep up the body fluids so that the blood can carry oxygen in sufficient quantities to give glucose to protect the liver function to keep up the chlorides and to maintain the stomach at absolute rest so that the bowel will be placed at rest.

The authors report a number of interesting cases, giving the history and treatment in detail. Recovery resulted in all. HAROLD M. CAMP, M.D.

Steinberg B, and Ecker E E. The Effect of Antiserum Against the Coli Soluble Toxic Substance of Bacillus in Bacillus Coli Peritonitis. *J Exper Med* 1926 xliii 443

The authors carried out experiments on rabbits to determine the role played by toxins in peritonitis and to elaborate an antitoxin of the bacillus coli. Injections of the toxins of the bacillus coli obtained by centrifugalizing a beef broth culture and destroying any bacilli remaining in the supernatant fluid caused peritonitis and death.

An antiserum against the soluble toxic substance of the bacillus coli was elaborated from rabbits which were injected intravenously with the supernatant fluid of centrifugalized young cultures of the organism. When this antiserum was given intravenously to twelve rabbits immediately or half an hour after the intraperitoneal injection of five times the usual lethal dose of bacillus coli, ten of the animals survived. I. EDWARD BISHAW, M.D.

Sicaud Robineau and Lichtwitz. Roentgenographic Shadows Suggesting Calculi in Tuberculous Pelvipерitonitis (Ombres radiographiques pseudo-calculueuses symptomatiques d'une péritonite tuberculeuse). *Bull et mém Soc méd d hôp de Par* 1926 xlii 127

A woman 35 years of age entered the hospital complaining of sciatica and pain in the right lumbar region. Several years previously she had fever and became emaciated but did not cough or expectorate. Except for this attack, she had always been well. At the time she entered the hospital her temperature was normal and her general health excellent.



On X ray examination the spinal column was found normal but the roentgenogram showed two large shadows in the pelvis which suggested bladder stones. One of these shadows was in front and to the right of the last sacral vertebra. It was the form and size of a pigeon's egg and very much darker than the sacrum. The other was to the left of the fourth sacral vertebra and about the same density as the sacrum. The physical and roentgen examinations of the lungs showed nothing abnormal. Cystoscopy revealed congestion of the bladder but no stone.

At laparotomy a mass was removed from the pelvis. In this mass there were numerous caseous abscesses, some zones which were soft and other zones which were clerotic. Histological examination revealed tuberculosis.

The roentgen spots described are often seen in caseous processes in the lungs but are rarely observed in tuberculous peritonitis because of the opacity, mobility and length of the intestine and the extent of the peritoneum. They can be detected in pelvipertonitis because the pelvic peritoneum in the pouch of Douglas is out of the way of the intestines.

AUDREY G. MORGAN, M.D.

Cutierrez A. Mobilization of the Root of the Mesentery. Its Surgical Value. (Consideraciones acerca de la movilización de la raíz del mesenterio su valor quirúrgico). *Rev. de ciruj.* Buenos Aires 1916 v. 65.

To reach the lumbosacral sympathetics retroperitoneal tumors and stones in the ureter in the region of the iliac vessels the author makes an incision slightly below and to the left of the root of the mesentery and displaces the latter by blunt dissection upward and to the right. This exposes the structures in the right lumbar region as far as the lower border of the third portion of the duodenum.

By pulling the great vessels over to the left toward the midline the right lumbar sympathetic trunk may be reached and by prolonging the incision at the lower end slightly to the left and displacing the vessels to the right the left lumbar sympathetic trunk is exposed. To reach the sacral trunk it is necessary only to continue the lower end of the incision downward.

Seven excellent illustrations render a description of the technique practically unnecessary.

JOHN W. BRENNAN, M.D.

## GASTRO INTESTINAL TRACT

Dieterich W. and Rost F. The Effects of Roentgen Ray Irradiation upon the Gastric and Intestinal Secretions. (Ueber das Verhalten der Magen und Darmsekretion bei Roentgenbestrahlung). *Strahlentherapie* 1925 xx 108.

To determine the effect of roentgen ray irradiation upon the secretions of the stomach and intestine the authors carried out experiments on dogs,

using a very penetrating ray so that the deep dosage was between 20 and 22.5 per cent. The tension of the apparatus ranged from 180,000 to 200,000 volts. The size of the field was 20 by 25 cm. and the current was between 2.5 and 3.0 ma. A filter of 0.5 mm. of zinc and 3 mm. of aluminum was used. The portions of the body not to be irradiated were well protected.

It was found that neither massive nor intense irradiation of the head or the lower portions of the body caused any noteworthy decrease in the acid or ferment content of the gastric or duodenal secretions. An occasional increase in the acid values and the pepsin content of the gastric secretion which was noted after the lapse of weeks could not be ascribed to the irradiation with certainty. Neither did direct irradiation of the stomach with heavy doses result regularly in a decrease in the acid or ferment values.

SILBERG (Z)

Von Stapelmohr S. A Case of Diffuse Acute Phlegmonous Streptococcus Gastritis Diagnosed During Life. Cured with Hourglass Stomach. (Ueber einen Fall von in vivo diagnostizierter diffuser akuter phlegmonöser Streptokokkengastritis. Heilung mit Sanduhrmagen). *Wien klin. Wchnschr.* 1925 LXXVIII 1010.

The author reports a case of acute phlegmon of the stomach, a condition which is very seldom diagnosed or operated upon. The patient was a woman 48 years of age who had previously suffered with symptoms resembling those of gastric ulcer and for two days had had a temperature of 39.3 degrees C. associated with very severe pain and protective tension in the region of the stomach. The rest of the abdomen was negative and the general condition good. After the disappearance of the abdominal tension a hard mass was palpable in the left hypochondrium.

A laparotomy performed on the ninth day under the diagnosis of infected pancreatic cyst revealed a tumor like phlegmonous inflammatory infiltration of the transverse mesocolon, gastrocolic ligament, transverse colon and omentum which extended upward to the edematous stomach which showed similar changes. After separation of a few loops of the small intestine a primary closure of the abdomen was done. Rapid recovery followed. The punctate from the wall of the stomach showed streptococci and bacillus subtilis.

When the patient was examined five years later she was free from symptoms but chemical examination revealed absence of free hydrochloric acid in the stomach and roentgen examination showed on the lesser curvature an hourglass constriction about the width of a finger.

KOENIG (Z)

Gmelin E. The Diagnosis of Syphilis of the Stomach. (Zur Diagnose der Magenlues). *Prakt. klin. Chir.* 1925, LXXV 507.

With the exception of the rectum the gastrointestinal tract is very rarely involved by syphilis.

In the last 10,000 autopsies at Eppendorf, not one case of syphilis of the stomach was found, and in a period of forty years Fraenkel saw only four. In two of the cases seen by Fraenkel the small intestine was also involved.

A clinical diagnosis of syphilis of the stomach cannot be made with certainty, but the presence of the condition may be suggested by the history, the Wassermann reaction, and the results of specific treatment. The most important sign is anacidity or hypacidity.

In two cases which came to operation on Sudeck's service under the diagnosis of ulcer and carcinoma respectively a dense infiltration suggesting an inflammatory process was found. This area was not sharply delineated from the normal tissue. Macroscopically, the resected specimen showed multiple infiltrating ulcers and microscopically an infiltration of the submucosa by plasma cell and lymphoid elements and occlusion of the lumina of the blood vessels by cellular material.

Specific treatment is recommended. When the diagnosis is first made during the course of an operation, resection of the affected portion of the stomach should be done. KEMPF (Z)

**Schmid O.** The Condition of the Vagus Nerve in Cases of Gastric and Duodenal Ulcer (Ueber das Verhalten des Nervus vagus bei Ulcus ventriculi und duodeni). *Wien med Wchnschr* 1925 LXX 1904.

Bergmann first suggested the spasm or nerve origin of ulcer in 1913. His theory was based on the observation that persons with gastric or duodenal ulcer show signs of a disturbance of the sympathetic nervous system. He concluded that the primary condition is probably a reflex irritation of the vagus nerve which causes a spasm of the musculature of the walls of the stomach. Reference has been made also by numerous other writers to a relationship between disturbances of the vagus and ulcer of the stomach.

Experimental work on the subject however has given very divergent results which do not by any means always support the neurogenic theory. To prove this theory it is necessary to demonstrate changes in the vagus in cases of ulcer. In thirty cases of gastric or duodenal ulcer in which the vagus nerves were examined by the author they showed no important differences from those in the control cases. None of the findings indicated damage to these nerves with certainty. The author therefore concludes that there is no anatomical basis for Bergmann's theory of ulcer.

HIRSCH (Z)

**Delore X, Mallet Guy O. and Vachev A.** Multiple and Recurring Forms of Ulcer of the Stomach (Les formes multiples et récidivantes de l'ulcère de l'estomac). *Lyon chir* 1935 XXXI 620.

Chronic ulcer of the stomach may be considered a local lesion subject to cure by local excision. For

ulcers of the lesser curvature excision is the primary treatment. For ulcers of the pylorus excision is secondary to gastro enterostomy and, after the failure of gastro enterostomy, is necessary to effect a cure. The late results are excellent. The study reported in this article was limited to the multiple and recurrent forms of ulcer constituting an "ulcer disease" of the stomach. The treatment of choice for this condition also is surgical.

The following types of cases are distinguished (1) those in which multiple ulcers (usually two) develop simultaneously or in succession (2) those in which after the cure of an ulcer by gastro enterostomy a new ulcer appears in a different location and (3) those in which an ulcer develops at the site of a resection (this can be properly called a recurrent ulcer).

The description of the pathological anatomy is based on forty cases. In only seven of these did the ulcers occur simultaneously in the same region. This incidence is probably abnormally low because the authors have usually found several ulcers in the same specimen, often a large one surrounded by several lesser ones. In thirty three cases ulceration occurred at the pylorus and on the lesser curvature and in two at the pylorus and on the anterior wall. Frequently the pyloric lesion is the older of the two as shown by the progress of healing. Only once was the reverse found true.

A clinical diagnosis of multiple ulcer should not be made from either the history or the physical examination except in cases of hourglass stomach combined with pyloric stenosis.

When the ulcers occur in the same region, they may be widely excised. After wide excision of an apparently isolated lesion, examination of the specimen not infrequently reveals the more complicated pathology. When excision necessitates a pylorotomy the operation should be performed in two stages.

An ulcer of the pylorus associated with an ulcer in the body of the stomach, neither of which is causing stenosis, is usually best treated by simple gastro enterostomy. This may be expected to cure the lesion of the pylorus and favorably influence the lesion in the body. A wide excision including the pylorus and enough of the body to include the other ulcer is the operation of choice, but usually the pathological changes render the operation unjustifiably long and complicated. Under certain circumstances a gastro enterostomy may be combined with excision of the ulcer of the body. Occasionally, when there is reason to believe that the lesions are tuberculous surgical treatment is contra indicated because of the high mortality of even gastro enterostomy.

Pyloric stenosis with an un-complicated ulcer of the lesser curvature is an absolute indication for gastro enterostomy. If the lesions prove intractable a secondary resection is indicated.

In cases with a pyloric and a midgastric lesion the latter alone producing stenosis, it is best to

resect the entire lower portion of the stomach to a sufficient extent to include the midgastric lesion. Because of the patient's poor condition a preliminary anastomosis of the upper pouch and the jejunum may be necessary. When the patient can withstand only the simplest of operations a gastrostomy may be performed and the tube passed into the duodenum.

A double stenosis calls for radical removal of both lesions unless the general condition forbids it or the lesion of the body is too high. Under the latter circumstance a gastro enterostomy with or without a gastrogastrostomy is performed.

In the same class with these complex lesions are the ulcers which develop in another location after the cure of a pyloric ulcer by gastro enterostomy. When the secondary ulcer is in the jejunum it is usually ascribed to the technique of the gastro enterostomy, trauma, silk sutures or hemorrhage. This complication is more common than is generally supposed. It is due not to technical errors but to an ulcerative disease of the stomach, a condition often associated with tuberculosis. The secondary ulcer may develop also in the lesser curvature in spite of a gastro enterostomy. The treatment is resection.

An ulcer recurring at the site of a resection is rare. It is the more rare the more extensive the resection. The best prevention of recurrence is rigorous post-operative medical treatment.

The author performs the Billroth II operation almost exclusively. He finds that the Pólya operation kinks the intestine in spite of all precautions and the Pean procedure places the anastomosis in the area from which the ulcer has been resected.

ALBERT F. DE GROAT, M.D.

**Amberger Perforation of Gastric and Duodenal Ulcers** (Ueber Perforation von Magen und Duodenalgeschwüren) *Ztschr. f. aer. u. Thorbild.* 1925, xxi, 545.

Like others, Amberger has observed an increase in the number of cases of perforation of gastric and duodenal ulcers in recent years. During the eleven years from 1908 to 1919 he saw eighteen, while in the four years from 1919 to 1923 he saw thirty-nine. In both periods 90 per cent of the patients were males and most of the ulcers were situated in the vicinity of the pylorus so that it was often difficult to determine whether they were in the stomach or the duodenum. The season of the year and trauma had no part in their causation. It is problematical whether the difference in the foods ingested or the widespread use of nicotine is responsible for the increase.

Since the prognosis is favorable only in the first twelve hours an early diagnosis is important. This is not difficult if the possibility of perforation is borne in mind. In doubtful cases it is better to do one laparotomy too many than one too few.

The treatment must be surgical. In his first cases Amberger merely closed the perforation by

suture but in his last twenty-eight cases he did a posterior gastro enterostomy with the modification of Kausch. The total mortality was 37 per cent which was extremely low. According to Amberger the mortality depends less upon the nature of the surgical procedure than upon the length of time that elapses between the occurrence of the perforation and the operation. SIMON (Z)

**Berner J. H. Internal or Surgical Treatment of Bleeding Gastric Ulcer?** (Interne oder chirurgische Behandlung blutender Magengeschwüre?) *Norsk Mag. f. Laegevidensk.* 1925, lxxvii, 1329.

During the period from 1914 to 1923 the author treated 126 cases of gastric and duodenal hemorrhage. Thirty-eight of these he excludes from this review because the bleeding was mild and not associated with marked anemia. In the eighty-eight others there were thirteen deaths, a mortality of 14.6 per cent. The patients who died ranged in age from 7 to 63 years. Eight were females. Ten cases came to autopsy. In no case of ulcer was there a perforation.

This series of cases shows that death due to bleeding from an ulcer is very rare. Hemorrhage from other causes seems to be fatal more frequently. Three of the deaths in the author's cases were due to varicose gastric hemorrhage associated with liver disease, one was due to hemorrhage caused by a carcinoma and two resulted from hemorrhage due to a hemorrhagic diathesis caused by infection (leukemia). Of these cases none could have been cured by operation. An ulcer was found at autopsy in only four.

The internal treatment of bleeding gastric and duodenal ulcer gives such good results so far as life is concerned that surgical measures are not necessary. At any rate when a patient is moribund the case should not be turned over to the surgeon in order that if death follows a futile operation the surgeon may share in the responsibility. Instead it would be better to adopt Finsterlin's practice of operating in every case of bleeding gastric ulcer.

KORITZINSKY (Z)

**Oehnell H. Experiences with the Parenteral Injection of Albumin in Gastric Duodenal and Jejunal Ulcers** (Erfahrungen ueber parenterale Eiweissbehandlung bei Magen, Duodenal- und Jejunalulcus) *Stenska Laekaridningen* 1925, xlii, 897.

Since 1923 the author has treated thirty-one cases of ulcer with novoprotein. Twenty-nine were ambulatory cases. The reactions were not as severe as those described by Cerman physicians.

In the cases of Group 1—those not previously treated for ulcer—the treatment resulted in a subjective cure in fifteen and failed in two. In Group 2—cases in which an ulcer diet had been given previously—it gave a subjective cure in seven and failed in three. Only four cases showed a recurrence after two months.

Important for the success of protein therapy are dietary measures and rest after meals. Ambulatory treatment is to be recommended only for patients whose living conditions are good.

The decision as to the effect of novoprotein treatment must almost always be subjective. While this treatment contributes toward a cure in a certain percentage of cases it does not by itself constitute an ideal method for the definite cure of ulcer. Hereafter Oehnell intends to place chief reliance on the old methods with rest in bed using ambulatory novoprotein treatment only in cases in which the patient's circumstances indicate it.

GERLACH (Z)

**Heyd C G. Carcinoma of the Stomach. Resection Implantation of the Duodenum into the Pancreas.** *Ann Surg* 19 6 lxxiii 346

The patient whose case is reported was a man 43 years of age who gave a history of loss of weight, weakness, cramp-like pains in the epigastrium several hours after eating and tarry stools. The X-ray showed an irregularity on the mesial surface of the stomach and an arrow canalization through the distal portion of the pylorus.

Operation revealed an infiltrating carcinoma of the distal third of the stomach and protruding through the patulous pylorus an annular carcinomaous ulcer with involvement of the lymph glands along the lesser curvature of the stomach and between the duodenum and pancreas.

A subtotal resection of the stomach, pylorus and first portion of the duodenum was done and a Billroth II operation performed. As there was insufficient duodenal tissue for an inversion the stump of the duodenum was sewed over and implanted into the peritoneum of the pancreas. The operation was followed by the development of a localized empyema, evidently secondary to a subpleural abscess which was probably of embolic origin. This was drained. The gastric wound healed thoroughly and the patient was discharged from the hospital thirty-three days after the operation on the stomach.

I EDWARD BISKROW, M D

**Hanssen F S. The Results of Surgical Treatment of Gastric Cancer (Resultate der chirurgischen Behandlung des Magenkrebes).** *Norsk Mag f Lægevidensk*, 19 5 lxxvii 1305

Hanssen reviews 280 cases of gastric cancer which were treated in the period from 1900 to 1913. One hundred and ninety-one of the patients were men. In 25.4 per cent of the cases a gastrectomy was done with an operative mortality of 8.45 per cent. In 26.1 per cent a gastroenterostomy with an operative mortality of 21.0 per cent and in 10.3 per cent an exploratory laparotomy with an operative mortality of 16.3 per cent. In 2.9 per cent various palliative operations were done and in 26.3 per cent no operation was performed.

Of fifty-one patients subjected to gastrectomy more than three years ago fifteen (29.4 per cent)

lived three years or longer after the operation but eight of them died from recurrence of the carcinoma from three to seven years after the operation. Seven patients were still alive from three and one-half to fifteen years after the operation six were cured and one patient who was operated upon seven years ago is now suffering from pernicious anemia.

The length of time between the appearance of the first symptoms and the patient's admission to the hospital was on the average the same for those operated upon radically later as for those operated upon otherwise. The duration of life after operation averaged 658 days in cases of gastrectomy, 225 days in cases of gastroenterostomy and 127 days in cases in which an exploratory laparotomy or no operation was performed.

KORITZINSKY (Z)

**Gosset, A and Thalheimer, M. Pulmonary Complications in Gastric Surgery. Autohæmotherapy (A propos des complications pulmonaires dans la chirurgie gastrique autohémothérapie).** *Bull et mem Soc nat de chir* 19 6, li 193

The pulmonary complications which frequently follow gastric operations are usually mild but occasionally may be quite severe. In 248 cases in which Gosset and his assistants performed a gastric operation in 1925 there were seven fatal pulmonary complications. In three in which an autopsy was performed a massive pneumonia was found.

Clinically the pulmonary complications were of two types. In one the temperature rose the first evening to about 39 degrees C and the chest became filled with coarse rales but desferescence occurred after one or two days. In the other the temperature rose on the third or fourth day and remained persistently elevated while the signs of a true bronchopneumonia developed in the chest. In some cases the expectoration became foetid indicating the presence of gangrene and in one case severe hæmoptysis occurred. The treatment of these complications is briefly discussed.

Following Vorschuetz and de Graser, the authors treated seven cases of pulmonary complications by injecting the patient's own whole blood. In three of these cases the complications followed a gastric operation. From 20 to 30 cc of blood drawn from an arm vein were re-injected into the muscles of the thigh. Usually the temperature fell after about twenty-six hours and simultaneously the auscultatory signs began to disappear. This result could not be obtained after the third day of the infection. In no instance did the injections have any untoward effect.

LAWRENCE JACQUES, M D

**Delore X, Creyssel J and de Rougemont J. Pre-operative and Postoperative Care in Stomach Operations (Les soins pré et post opératoires dans les interventions gastriques).** *I resse med* Par 19 5 lxxvii 1410

In addition to the ordinary pre-operative care given in any case in which a laparotomy is to be

performed the authors believe that when a gastric operation is indicated pre operative gastric lavage should be done except in a few rare instances. The objection sometimes urged that it shocks the already weakened patient is not tenable since experience has shown that the weakest patients bear lavage very well and these are the ones that would be most injured by the absorption of retained gastric fluid. If lavage is performed gently and slowly with hot liquid there is no danger that it will cause hemorrhage except possibly when copious hemorrhage of red blood has already occurred from the ulcer. It should be done in the evening before the operation and followed by almost complete abstinence from food.

In addition the mouth and teeth should be carefully disinfected for several days before the operation and if necessary fluid should be supplied by repeated injections of physiological salt solution. If diuresis is low (100 to 800 c cm of urine for example) glucose solution should be given. Roentgen examination should be avoided the day before the operation unless it is absolutely necessary. The presence of bismuth in the stomach during operation is troublesome and seems to favor separation of the sutures.

Postoperative gastric lavage is very beneficial when indicated but should not be practiced routinely to prevent possible complications. The chief essential in the postoperative care of the normal case is nutrition. It has been the custom to give nothing but liquid for several days but semiliquid food may be given on the second or third day. This may save the lives of patients who otherwise would die of acute inanition and dehydration with secondary toxic symptoms due without doubt to arrest of kidney elimination. Of course the feeding depends upon the indications in the particular case. In a case of non stenotic ulcer treated by simple gastroenterostomy fasting will do no harm while in a case of stenosis from tumor nourishment should be given as soon as possible.

The most frequent postoperative complication is hemorrhage into the stomach. This is generally shown by the repeated vomiting of small amounts of liquid mixed with dark blood. The treatment is hot gastric lavage which not only removes the blood but usually restores the muscle tonus. If instead of regaining its tonicity the picture of acute dilatation develops evacuation and hot lavage are indicated but if true peritonitis has developed lavage will do no good and the ordinary treatment for peritonitis should be given.

Sometimes a vicious circle is established and at the end of the first or the beginning of the second week the patient begins to have uncontrollable bilious vomiting. Lavage may be tried but if it fails and the symptoms grow worse operation must be performed at once. Two other complications which require operation are occlusion by the button and secondary closure of the opening by cicatricial contraction. The former occurs between the

twelfth and twentieth days when the anastomosing button is expelled and the latter generally at the end of from one to three months but sometimes later.

AUDREY G. MORGAN, M.D.

Butler E. and Delprat G. D. *Intestinal Obstruction*. California & West Med. 1926 xiv 483.

This article is based upon ninety three cases of intestinal obstruction operated upon at the San Francisco Emergency Hospital with a mortality of 34.4 per cent. The treatment given in such cases is as follows:

One thousand cubic centimeters of a 10 per cent glucose solution are given intravenously and if the patient is toxic and dehydrated very slowly. Hypodermoclysis. Weeks drip and gastric lavage are employed if the operation is delayed.

The field of operation is dry shaved scrubbed with ether and alcohol and painted with a 5 per cent alcoholic solution of picric acid. Ether anesthesia is used when the cause of obstruction is undetermined as in cases of internal hernia, volvulus or adhesions while nitrous oxide-oxygen or local anesthesia is employed when the obstruction is produced by a strangulation. Enterostomies are usually done under local anesthesia. During the operation normal salt solution is given subcutaneously into the axillae or deep into the muscles of the thighs if the surgeon deems it necessary.

If the cause of the obstruction is not evident at once the hand is introduced when the peritoneum is opened and a search is made for the site of the obstruction. Any band of adhesions, volvulus, thickened bowel, tumor or fixed bowel is usually palpated immediately. This procedure very often does away with unnecessary handling of loops of distended bowel.

Matthews believes that enterostomy in the first loop of jejunum and immediately above the obstruction if there is any damage to the muscular wall should always be performed particularly if considerable vomiting has occurred.

After the operation in the authors' cases the nurse is instructed to flush the catheter with normal salt solution every two hours or if it becomes plugged more frequently. The catheter is connected with a bottle hanging on the side of the bed. The quantity of fluid that will be drained from the upper jejunum in the first twenty four hours is large. If the drainage is continuous the toxic condition rapidly improves and vomiting seldom occurs. Fluids are supplied to the tissues intravenously if necessary but otherwise by subcutaneous and intramuscular injection.

Weeks drip three hours on and one hour off is begun immediately upon the patient's return from the operating room. The first fluid that enters the rectum contains a dr of tincture of digitalis. Hot compresses to the abdomen are comforting and promote early peristalsis. The authors never give pituitrin until peristalsis has begun. Morphine sulphate should not be withheld as the patient must

be kept comfortable. The enterostomy tube is removed as soon as peristalsis is active and the bowels have moved.

In none of the authors' cases has there been any disturbance from the fistula after the removal of the enterostomy tube. CARL R. STEINKE, M.D.

**Perlmann J.** Clinical Contributions on the Pathology and Surgical Treatment of Intestinal Obstruction (*Klinische Beiträge zur Pathologie und chirurgischen Behandlung des Darmverschlusses*). *Arch f klin Chir* 1925 cxxxvii 245

In 215 cases of ileus operated upon during twenty years there were 200 cases of mechanical ileus and ten cases of adynamic ileus. Eighty per cent of the patients with mechanical ileus were males. In the 111 cases of volvulus the ratio of males to females was 8 to 1. These constituted 50 per cent of the total number of cases of ileus. The mortality was quite high—in the total number of cases 58 per cent and in the cases of volvulus of the small intestine 70 per cent.

Obturator ileus should be treated operatively as soon as possible. The relatively rarely observed intussusception which occurred in nineteen cases is much more common than is generally believed but is too infrequently diagnosed in children. This fact Perlmann believes is responsible for the high mortality from intestinal obstruction in Russia.

Of the operative measures in ileocolic invagination reduction of the invagination gives the best results.

Great emphasis is laid upon the difference between strangulation ileus and obturator ileus. In the former there is an associated constriction of the mesentery.

In regard to the etiology of volvulus it was observed that this condition occurred very frequently during the month of August when during the day, the peasants undergo great bodily exertion in gathering the crops and eat nothing and at evening fill their previously empty gastro intestinal canals with large amounts of vegetable food. The high mortality in cases operated upon is attributed to the already existing peritonitis due to the patient's delay in coming to the surgeon.

Attention is called to the relatively slight symptoms particularly at first in thirty five cases of volvulus of the sigmoid flexure. In volvulus of the sigmoid flexure the author regards detorsion as the method of choice, and in suitable cases prefers an anastomosis to resection. Hook (Z).

**Wolf C. G. L., and Canney J. R. G.** The Treatment of Ileus by Choline. *Lancet* 1916 cxx 707

Following up experiments in Magnus laboratory and the work of Klee and Grossmann in the Romberg clinic in Munich the authors studied the clinical effects of choline hydrochloride in the treatment of ileus.

The clinical records of four cases treated with choline tend to support the experimental data and

show that intestinal contractions can be easily induced.

Therapeutic doses of choline do not seem to be toxic. The drug is administered intravenously in normal saline solution and should be given slowly. WILLIAM E. SHACKLETON, M.D.

**Bolling R. W.** Chronic Irreducible Intussusception in a Twelve Months Infant. *Resection*. *Ann Surg*, 1926, lxxviii, 545

Bolling reports the case of a year old infant who was suddenly seized with an illness characterized by vomiting, irritability, the passage of dark blood and mucus by rectum and distention of the abdomen. The vomiting and bloody stools ceased and the distention gradually became less but the irritability continued.

When the child was seen by Bolling two weeks later it did not appear acutely ill but was apathetic and somewhat dehydrated. Examination revealed an elongated mass in the upper part of the abdomen on the right side and extending across the midline. X-ray examination after a bismuth enema confirmed the diagnosis of chronic intussusception.

At operation an intussusception of the ileocecal region into the splenic flexure was found. Reduction was possible only to the upper portion of the ascending colon. Resection of the distal ileum, the cæcum, and the ascending colon was done and followed by axial anastomosis of the ileum and transverse colon. Recovery resulted. I. EDWARD BISHKOW, M.D.

**Hertz J. and Basset A.** Cases of Acquired Periduodenitis (Observations de périduodénite acquise). *Bull etim Soc nat de chir* 1925 li 1010

In eight of eleven cases of periduodenitis the infection had its origin in the appendix and in three it began in the gall bladder. It reached the periduodenal region by way of the lymphatics and glands and the adhesions formed around inflamed glands. In cases of periduodenitis it is therefore important to search for appendicitis, and in cases of appendicitis to look for periduodenitis. When at operation in cases of periduodenitis the cause is not evident in the duodenum or the neighboring organs the appendix should be examined through the same incision and should be removed if it is found diseased.

In the liberation of adhesions heavy bands should be divided between ligatures, and the area should be peritonized as completely as possible. The use of a free omental graft for the peritonization is rarely successful on account of the attenuated infection and the operative site.

When the gastroduodenal disturbances are marked or are likely to recur as the result of the reformation of adhesions, when the adhesions are difficult to liberate or cannot be liberated completely, and when it is impossible to obtain perfect peritonization gastro enterostomy or duodenoduodenostomy should be done.

WALTER C. BURKET, M.D.

**Bolling R W** Complete Congenital Obstruction of the Duodenum Duodenojejunostomy at Nine Days *Ann Surg* 1926 lxxviii 543

In the case of an infant weighing 6 lb 9 oz at birth and 5 lb when it was 9 days old persistent vomiting occurred and the x ray showed complete obstruction of the duodenum. At operation the duodenum was found dilated to two thirds the size of the stomach.

An anastomosis between the duodenum and the jejunum was done anterior to the colon. After a stormy convalescence the child made a good recovery. I EDWARD BISHKOW MD

**Kapsinow R** The Experimental Production of Duodenal Ulcer by Exclusion of the Bile from the Intestine *Ann Surg* 1916 lxxviii 114

In the experiments reported the fundus of the gall bladder was implanted transcortically into the pelvis of the right kidney and when healing was complete the flow of bile was entirely diverted into the urinary tract by ligation and division of the common duct.

Of forty three animals treated in this manner seventeen developed typical duodenal ulcers. The lesions were single or multiple and situated usually in the vicinity of the ampulla of Vater. They bore no relationship to the mesenteric border of the intestine. They ranged from minute lesions to ulcers measuring from 1.2 to 1 cm in diameter. They had a punched out appearance, the edges overhang the serosa. Their microscopic appearance was that of the subacute or chronic peptic ulcer in man.

These experiments showed that duodenal ulcers can be produced without trauma to the intestinal wall and may be caused in dogs not previously diseased. Whether they preceded or followed the nutritional disturbances incident to the exclusion of bile could not be decided. Further experimentation will be necessary to learn the details of the processes leading to their formation.

LAM C. KOBITSCHER MD

**Hyden R L and Orr T G** The Effect of Jejunostomy in Experimental Obstruction of the Jejunum of the Dog *J Exper Med* 1916 lxxiii 443

The authors carried out experiments on twenty five dogs to determine the effect of jejunostomy alone and combined with the administration of sodium chloride on the chemical changes in the blood and the duration of life in cases of high jejunal obstruction.

Obstruction was obtained by dividing the jejunum and invaginating the ends. The jejunostomy was done by the Witzel operation. The following conclusions are drawn.

1 Jejunostomy does not prevent the development of the chemical changes in the blood which are characteristic of obstruction of the jejunum in the dog.

2 Jejunostomy following experimental obstruction of the jejunum does not prolong life. There is some evidence that early jejunostomy may shorten life.

3 The treatment of jejunal obstruction with sodium chloride solution tends to prolong the life of animals regardless of the performance of jejunostomy. I EDWARD BISHKOW MD

**Flechtenmacher C Jr** Radical Operation for Postoperative Peptic Ulcer of the Jejunum with Resection of the Colon and a Contribution on the Choice of Operative Procedures for Gastric Ulcer (Zur Radikaloperation des Ulcus pepticum jejuni postoperativum mit Kolonresektion zugleich ein Beitrag zur Wahl der Operationemethode des Ulcus ventriculi) *Wien med Wchnschr* 1923 lxxv 2581

The author advocates resection for peptic ulcer. For gastric ulcer he prefers the Billroth II operation although the Billroth II operation gives equally good results. The treatment of peptic ulcer of the jejunum should be radical surgery. The surgeon should not hesitate to remove considerable tissue even the transverse colon. Dietetic after treatment is of importance. Gastroenterostomy guarantees neither the healing of an ulcer nor permanent freedom from symptoms and it does not always protect against recurrence or subsequent perforation or hemorrhage. Moreover it permits the confusion of callous ulcer with carcinoma and is often followed by peptic ulcer of the jejunum.

The author reports several cases showing the excellent results given by resection even in the cases of patients who are in poor condition. He admits however that recurrence may develop even after radical operation. He believes that when this occurs the tendency to form ulcers is so strong that the condition is incurable by surgery.

For the operation Flechtenmacher prefers total anesthesia of the abdominal wall and anesthesia of the splanchnic nerve induced by Braun's method. He believes that the serious pulmonary complication which has occurred in one of his cases could have been prevented if instead of inducing anesthesia with chloroform and ether after making the incision (which was his practice in the cases of the more sensitive patients) he had relied entirely upon the local and splanchnic anesthesia. COLLEY (L)

**Duettmann** Recurrent Appendicitis Following Appendiceal Abscesses (Ueber Appendicitis rezidiv nach appendicitiden Abscessen) *Muench med Wchnschr* 1925 lxxv 1870

The author accepts the opinion held at the Giessen Clinic regarding the two stage operation for appendicular abscesses and has abandoned the one stage radical procedure. In 36 cases treated solely by incision of the abscess there were only three deaths a mortality of 0.8 per cent. Of the 314 (86 per cent) patients who came to the secondary operation only one died a mortality of 0.3 per cent. The total

mortality was therefore about 1.09 per cent which is very low as compared with the mortality of the one stage operation (Wolff, 10 per cent Noetzel Riediger 10.2 per cent, Dewes 6.8 per cent)

When the appendix is not removed at the first operation, new attacks of appendicitis are not rare. Recurrences have been known to develop as long as nine years after the incision of an abscess. Of the patients whose cases are reviewed by the author thirty five (9.6 per cent) came for a second treatment for abscess and twelve (3.3 per cent) for a third treatment. All of these were patients who did not return for the second stage of the two stage operation.

Two hundred and eighty five patients (78.3 per cent) appeared for the secondary appendectomy after a period of three or four months. Eighteen who returned later were all re-operated upon under the diagnosis of acute appendicitis. In most of these cases a severe inflammation was found.

Of the 285 cases operated upon secondarily after a period of three or four months, total obliteration of the appendix had occurred in only eleven. Acute inflammation was found in sixty five and chronic inflammation in seventy two. In twenty five of those with chronic inflammation there was obliteration of the proximal portion of the appendix with dilatation of the peripheral portion by pus. In seventy three cases the tip of the appendix was obliterated but the proximal portion still showed a good covering of mucous membrane. In two cases fistulae had formed.

Duettmann emphasizes the fact that in all patients operated upon twice or three times for abscesses the appendix was surprisingly well preserved. Therefore, repeated abscess formation does not always cause obliteration.

He therefore agrees with Kuemmel that a radical operation is always best. In view of the exceedingly favorable results obtained at the Giessen Clinic with the two stage operation for appendicular abscess he considers the latter the least dangerous procedure and accordingly the operation of choice. The second operation can be combined with the laparoplasty which is so often necessary as a second procedure following the one stage operation.

LOEHR (Z)

## LIVER, GALL BLADDER, PANCREAS AND SPLEEN

Grile G W A Cytoplasmic Role of the Liver  
*Thrap Ga* 19 6 1 166

Starting with living and 'non living' substances as chemically identical and separating these substances into atoms, Grile describes the development of life and its reproduction in terms of electricity. He traces the source of life to the vibrant energy of light and finally applies his theory to the human anatomy, especially the liver and brain.

He emphasizes the danger of the cooling of the viscera in abdominal operations and to prevent it

recommends diathermy to the upper abdomen and lower chest in all laparotomies. He suggests also the substitution of nitrous oxide anaesthesia for ether anaesthesia. In a case which is a poor risk the patient should not be allowed to pass beyond the stage of analgesia reliance being placed chiefly on regional anaesthesia.

JOHN A WOLFER MD

Rubenstone A I and Tuft L A Comparative Study of Liver Functional Tests *J Lab & Clin Med* 1926 11 671

The function of the liver is difficult to test as it must be tested indirectly through the blood or bile. The liver has a large margin of safety only one fourth of the organ being necessary to maintain normal function and the functions of the liver are multiple being concerned with the metabolism of carbohydrates, protein, fat and iron, the secretion of bile and the filtration from the blood of noxious irritants particularly foreign proteins.

In an organ with so many functions it is difficult for a single test to serve as an index of total function.

The haemoclastic crisis of Widal is intended to indicate the albumose storing or proteopectic function of the liver. In the authors' experience the findings of this test have been variable and difficult to interpret.

The levulose tolerance test is dependent upon the fact that ingested levulose in contrast to glucose, produces only a very slight rise in the blood sugar which seldom lasts longer than an hour. This test may serve as an index of the carbohydrate function of the liver but is of clinical assistance only when marked liver changes have occurred. It is of little or no aid in the milder hepatic dysfunction in which a functional test is most desired.

Various diseases of the liver are associated with a marked increase in the bilirubin content of the blood resulting often in frank icterus. Between the normal and the point at which frank icterus occurs is a period of latent icterus in which the bilirubin concentration though increased above the normal is not sufficient to cause definite jaundice.

The quantitative estimation of serum bilirubin is best performed by the method of Van den Bergh or Meulengracht. The test serves to indicate the extent of impairment of biliary function and the response to treatment. In the authors' cases of jaundice with a high index improvement was shown by a decrease in the index before any change was detectable in the color of the skin. Patients with cholecystitis had indices varying from normal up to 15 or more. The index was increased in hepatic cirrhosis. Malignancy of the liver always produced a high index.

The phenoltetrachlorophthalein test of Rosenthal has given good results. The percentage of dye retention was found to be proportional to the degree of liver dysfunction reaching 35 per cent in the severe types. The injection of so much dye in cases in which the liver is already damaged is not always safe.



Studies of the blood nitrogen partition are of little value from a practical clinical standpoint. Increases of advanced liver disease the uric acid value is low and the non protein nitrogen value comparatively high but in cases with less severe hepatic disease the proportion is usually within normal limits. The author combines the tests in the following way:

The patient is prepared as for a levulose tolerance test and the calculated amount of dye contained in a syringe is made ready. Blood is then withdrawn into two tubes one citrated and one a plain tube. Enough blood is withdrawn for all of the tests. Through the same needle the calculated amount of dye is injected. The patient then immediately drinks the levulose solution and thereafter blood is withdrawn into plain and citrated tubes from a vein of the opposite arm at intervals of thirty minutes one hour and two hours.

After the blood has clotted it is centrifugalized and the serum is pipetted off. The serum collected before the injection is used for the icterus index determined and as a standard for the dye test. The citrated blood collected before the injection is used for the uric acid nitrogen non protein nitrogen and sugar determinations. Blood sugar determinations are then done on all bloods (citrated) taken subsequent to the injection and the sera are used to determine the dye retention.

HOWARD A. McKNIGHT, M.D.

Berger S. S. Cohen M. B. and Selman J. J.  
Liver Function Tests. A Comparative Study of  
Five Methods in 100 Clinical Cases. *J. Am. Med. Ass.* 1926 LXXVI 1114

The authors report 100 cases in which five liver function tests namely the Van den Bergh-Widal (haemoclastic crisis), Rosenthal urobilin and urobilinogen tests were made.

Four groups of cases were examined: (1) cases of liver disease with jaundice; (2) cases of liver disease without manifest jaundice; (3) cases in which liver disease was suspected but not demonstrated clinically; and (4) cases in which liver disease was unsuspected.

The authors found that the various tests do not give parallel results and were unable to separate clinical cases into those of liver disease and those without liver disease by means of any one of these tests unsupported by other clinical evidence. When all of the tests were positive they were dealing with liver disease of the most severe type namely that associated with toxic jaundice. In every case in which all tests were positive except the Widal test there was obstructive jaundice due to tumor. This finding is of great value in the differential diagnosis.

JACOB S. GROVE, M.D.

Fernstroem B. A Case of Subphrenic Abscess with Vomited Gall Bladder. *Acta Chir. Scand.* 1926 LIX 534

The author reports a case of gangrenous cholecystitis with abscess formation. When opened the

gall bladder was found to contain gall stones. Operation was preceded by the vomiting of blood during which the gall bladder was ejected into the stomach or intestine. Recovery resulted.

Graham F. A. Gall Bladder Diagnosis from the Standpoint of the Surgeon. *Radiology* 1926 VI 273

Lyon B. B. V. The Evolution of Early to Late Gall Tract Disease. A Brief Consideration of Its Diagnosis and Treatment. *Radiology* 1926 VI 79

Zink O. C. A Clinical Study of Cholecystitis with the Aid of Cholecystography. *Radiology* 1926 VI 286

George A. W. The Practical Value of the Graham-Cole Method in the Diagnosis of Gall Bladder Disease as Compared with the Older Method. *Radiology* 1926 VI 292

GRAHAM calls attention to his previous work showing that hepatitis is a constant accompaniment of cholecystitis and that early diagnosis and treatment is essential for the avoidance of late and permanent changes in the liver and possibly also in the pancreas. In the past the recognition of gall bladder disease was based largely upon the late changes. Graham believes that by cholecystography with the aid of tetraiodophenolphthalein valuable information relative to the function of the gall bladder may be obtained and that perversions of function so recognized may lead to the earlier recognition of pathological conditions.

The criteria upon which a diagnosis of cholecystitis is to be based after the abdomen has been opened are the following: (1) stones; (2) adhesions of the gall bladder to surrounding structures; (3) thickening and change of color; (4) enlargement of the sentinel gland of Lund; (5) evidences of hepatitis involving chiefly the right lobe of the liver. Occasionally gall bladders are opened and removed when the mucosa shows changes such as cholesterol plaques.

The growing confidence in the significance of cholecystographic findings has led on several occasions to the removal of a gall bladder which seemed normal on inspection and palpation in every instance in which this was done microscopic examination revealed pathological changes in the walls of the organ.

Efforts have been made to use substances for cholecystography which will make it possible to obtain information relative to hepatic function by serum tests. An isomer phenoltetraiodophthalein has been found to answer this purpose but sufficient work has not yet been done with it to determine its practical value.

Lyon confines himself largely to a discussion of non surgical drainage of the gall bladder and the diagnostic information which may be derived from it. He claims that this procedure provides a means of investigating the living histology of the biliary tract in much the same way as surgery permits the study of its living pathology. Microscopic study of material aspirated from the duodenobiliary tract reveals the type, degree and source of epithelial

exfoliation. In the early stages of cholecystitis the changes noted may indicate merely a catarrhal process. If this is allowed to run its course extensive and readily recognizable damage may be done to the hepatic, pancreatic, gall bladder, and bile duct cells.

Acute gall bladder disease is usually an acute exacerbation of a chronic process. If traced back it will often be found to have had its origin in a focal infection with repeated local manifestations followed by successive gastro intestinal disturbances of an indefinite nature culminating finally in frank gall bladder symptoms. Non surgical gall bladder drainage not only gives information regarding the presence of pathological changes, but may serve to check or cure the process and thus obviate the necessity for surgical drainage.

Zink regards cholecystography as of prime importance in the diagnosis of early cholecystitis. He discusses briefly the relative values of and the indications for the oral and intravenous methods of giving the dye, and states that questionable findings following its oral administration should always be checked by its intravenous injection.

The diagnosis of gall bladder disease by cholecystography is dependent upon (1) excretion by the liver (2) patency of the cystic duct, and (3) the mucosal concentrating power of the gall bladder.

Failure to obtain a shadow with the use of a standard technique indicates (1) cystic duct occlusion (2) hepatic insufficiency (3) a small sclerotic gall bladder with an obliterated lumen (4) cystic lymphatic damage or (5) failure of the dye to be absorbed (when it is given orally). In the absence of these conditions the time of appearance, density, and motility of the gall bladder shadow are indirect indications of the pathological condition of the mucosa.

Cholecystography gives valuable confirmatory evidence in cases with frank clinical evidences of gall bladder disease, but its greatest value lies in its demonstration of such disease in the early stages when there are only vague gastro intestinal disturbances of doubtful origin. The method was used by Zink in 663 cases. Of 131 of these which were operated upon the findings were confirmed at operation in 96 per cent.

George's experience with cholecystography in gall bladder disease has convinced him that the older method of roentgen examination developed largely by himself is equally, if not more reliable in diagnosis except with regard to gall stones. The older method is based primarily upon the fact that the pathological gall bladder may be visualized roentgenographically with a proper technique and that secondary evidences obtained with the aid of the opaque meal such as 'gall bladder seats' adhesions to the second part of the duodenum filling of the ampulla of Vater and adhesions to the hepatic flexure of the colon are strong indications of cholecystitis. Visualization of the gall bladder after the administration of dye can give information only with regard to the size, shape, and location of that

organ. Non visualization although of some value may lead to error, especially when the dye has been administered orally. Variations of emptying time are of doubtful significance because the normal time has not yet been accurately determined. With regard to stones, George states that those of the cholesterol type can be detected far more readily after the administration of dye than by previous methods.

It is George's conviction that the soundest procedure today for the study of the gall bladder is a thorough examination by the older method with substantiation of the findings so obtained by the use of the Graham Cole procedure.

ADOLPH HARTUNG, M.D.

Babcock, W. W. Cholecystitis and Appendicitis

*Surg. Clin. N. Am.* 1926, VI, 20.

Babcock, W. W. Cholelithiasis, Chronic Salpingo-

Oophoritis with Adherent Abdominal Scars

*Surg. Clin. N. Am.* 1926, VI, 30.

For the usual appendectomy the author advocates a transverse skin incision 4 or 5 cm. in length, beginning 1 cm. median to the anterosuperior spine of the ilium. He believes that the crushing of the appendix with forceps disseminates the infection and that a pursestring suture may contaminate the wound. He therefore ligates the appendix and ties the stump of the meso-appendix over the stump of the appendix. Spinal anesthesia is used in cases with purulent peritonitis due to appendicitis. The appendix is removed and drainage used only for the evacuation of solid exudates, foreign bodies, blood or blood clots or old pus. Packing, sponging, wiping and the introduction of the hand into the abdomen are condemned. Salt solution given subcutaneously is preferred to water by rectum. Water and food by mouth are withheld to favor localization of the infection. Localization is indicated by the subsidence of pain and tympany and the expulsion of gas and feces. If the administration of a little liquid by mouth is followed by pain and an increase in the temperature the localization is not sufficient.

With regard to gall stones the author states that in the case of an obese middle aged woman a history of a sudden attack of severe indigestion at night and a sense of epigastric fullness which the patient tried to overcome by belching or vomiting both of which were quite relieved the following day is truer evidence of gall stone obstruction than any known laboratory test or method of physical examination. In certain instances it is well to think of a cardiac attack, coronary obstruction and aortitis in the diagnosis.

In operations for gall bladder disease the condition of the liver should be noted as it is the best indication of the prognosis after cholecystectomy. A liver that has been degenerating for from fifteen to twenty years will not be restored to its primary function by the removal of the gall bladder. When the common duct has been obstructed for some time the author effects gradual decompression of

the liver by anastomosing the gall bladder to the duodenum or stomach with the use of an in and out suture which gradually cuts a new stoma between the two organs. This suture is reinforced by a continuous seroserous suture.

In cases of biliary fistula in which the gall bladder has been removed Babcock carefully dissects out the fistulous tract and anastomoses it to the duodenum or stomach.

JOHN A. WOLFER, M.D.

**Fabritius W. Spontaneous Perforation in Cholecystitis without Stones** (Spontanperforation bei Cholecystitis sine concrements) *Wien med Wchnschr.* 1925 lxxv 2580

The symptoms of cholecystitis without stones frequently simulate those of cholelithiasis and the condition is often not diagnosed until operation is performed. More rare are cases in which a severe chronic inflammation of the gall bladder develops without any symptoms until a life-threatening complication suddenly develops and necessitates immediate operation. The author reports a case of the latter type. The patient, a previously healthy woman, awoke one night with severe pain in the right side of the abdomen. Severe vomiting soon set in and there was a typical McBurney pressure point. A diagnosis of appendicitis was made.

When the peritoneum was opened, dark bile gushed out. The appendix was normal. When the only lightly enlarged gall bladder was freed from the great omentum partly by blunt dissection and partly by means of ligatures, a pinpoint perforation from which dark bile was slowly trickling was found on the anterior aspect of the fundus. Stones were not demonstrable in either the gall bladder or the deeper biliary passages. Cholecystectomy was followed by recovery.

The excised gall bladder contained no stones and its mucous membrane showed no ulcerous or destructive processes. At the point of perforation there was a circumscribed necrosis which penetrated the entire thickness of the gall bladder wall.

COLLEY (Z)

**Bonnet M. L. and Lapoint M. A. Perforation of a Cancer of the Gall Bladder into the Peritoneal Cavity. Emergency Cholecystostomy and Secondary Cholecystectomy. Cure** (Perforation en péritoine libre d'un cancer de la vésicule biliaire. cholécystostomie d'urgence et cholecystectomie secondaire) *Revue de Chirurgie* (Paris) *Ann. et Mem. Soc. nat. de chir.* 1926 l xxx

Bonnet reported the case of a woman 55 years of age who was admitted to the hospital with severe pain in the right hypochondrium associated with muscle spasm and persistent vomiting, a temperature of 38.0 degrees C. and a pulse of 110. She had had a similar attack six months previously.

Laparotomy revealed perforation of the gall bladder and free bile in the peritoneal cavity. The inferior surface of the gall bladder was adherent to the transverse colon. Stones were carefully sought

but were not found. The wound was closed with drainage. Convalescence was uneventful and the patient was discharged after eighteen days with a small biliary fistula. Four months later the fistula was excised and a cholecystectomy was done.

On examination of the gall bladder one stone was found. Histological examination revealed an atypical growth of the gall bladder cells with evidence of malignancy. In the author's opinion this was a case of primary cancer of the gall bladder.

Lapoint calls attention to the rarity of cases of rupture of the gall bladder by cancer so far as he is aware no such case has been reported in the literature. He believes that the diagnosis is possible only on operation as there are no pathognomonic symptoms.

PAUL C. C. LONNA, M.D.

**Sohn A. Fatal Biliary Peritonitis After Puncture of the Common Duct** (Tödliche gallige Peritonitis nach Punktion des Choledochus) *Zentralbl. f. Chir.* 1925 li 2578

In a patient with a penetrating callous ulcer of the lesser curvature an anterior gastro-enterostomy with a Braun anastomosis was performed and there was a malformation of the intestine, a puncture of the common duct was done to clear the site of operation. The puncture was done with a record syringe and a very small needle. After the aspiration of bile a hot salt compress was applied to close the small opening. No seepage of bile was noted thereafter. Four days later the patient died of peritonitis.

Autopsy revealed a biliary peritonitis caused by the escape of bile from the point of puncture. This case shows that after puncture of the biliary tract without drainage the punctures should always be sutured and that when the common duct is sutured drainage is necessary as a puncture of the wall may reopen.

WORTMANN (Z)

**Payr E. Exposure of the Common Duct in Operation for the Recurrence of Stone After Cholecystectomy** (Freilegung des Ductus choledochus bei Rezidivoperationen nach Cholecystektomie) *Zentralbl. f. Chir.* 1925 li 1986

It is not always possible even with the best technique to avoid leaving behind small gall stones high up in the branches of the hepatic duct. Stones are less frequently left in the common duct and the papilla of Vater. A method of preventing this error which is described by Payr and Iurasz consists in exploring the biliary passages with the use of rubber catheters and a syringe. The author has frequently observed that secondary operations for the removal of stones from the common duct are accompanied with difficulties that are little understood. It is therefore necessary to obtain further information with regard to the type of recurrent adhesions and the order in which they should be removed.

Almost always following a cholecystectomy there is found a field of adhesions on the anterior wall of

the abdomen which involves the scar in the abdominal wall, the liver, the transverse colon which is pulled forward, the omentum which is pulled upward and the stomach which is pulled to the right. The separation of these adhesions is easily accomplished by segmental ligation and severance of the omentum. The liver is held up, the stomach held to the left and the colon held down.

The next layers of adhesions to be attacked are those which hold the duodenum high up in the gall bladder bed. The adhesions between the liver and the upper horizontal portion of the duodenum are usually dense and the duodenum like a cap conceals similar structures in the hepatoduodenal ligament. Even when the adhesions are very thick, the duodenum can be easily freed with the knife. The vertical portion can then be mobilized by approaching from the right side according to the method of Kocher. This exposes the hepatoduodenal ligament.

The papilla can be approached only after the separation of the duodenum from the liver and further mobilization of the angle. If the foramen of Winslow is patent, this dissection can be facilitated by the introduction of the forefinger. The common duct which is greatly dilated by gall stones impacted at the papilla often shimmers through with a blue color and is easily recognized. The passage way should be punctured the bile aspirated two small sutures applied and the duct opened.

Investigations of the retroduodenal portion by means of sounds, calculi spoons and forceps and the little finger often establishes the presence of concretions. These can usually be removed easily through the dilated passage. If the duodenum has been sufficiently mobilized from the right side stones in the papilla can be pushed along. The main stem and the two large branches of the hepatic duct should then be examined and a T shaped drain inserted.

WORMAN (Z)

**Havlicek H.** A Case of Rupture of the Pancreas and Spleen Cured by Operation and Some Comments on the Shoulder and Arm Pain (Ein operativ geheilter Fall von Pankreas Milzruptur und einige Bemerkungen ueber den Schulter Armschmerz) *Zentralbl f Chir* 1925 lii 1967

The author reports the case of a boy 13 years of age who sustained a rupture of the spleen and pancreas and a dislocation of the hip in a fall. The injury was followed by severe shock and on exploratory puncture a bloody exudate was found in the peritoneal cavity.

At first a temporary clamping of the pedicle of the spleen was done and the blood collected in the peritoneal cavity was reinfused. When the general condition had improved splenectomy was performed. A piece of the tail of the pancreas which was torn off was removed and the stump of the pancreas was sutured over and invaginated into the posterior wall of the stomach. The abdominal wall was then completely closed.

Convalescence was smooth except for two attacks of severe pain in the left shoulder and arm. During the first attack the left radial pulse disappeared entirely and the skin of the arm became cool and cyanotic. In both attacks the pain was immediately relieved by a novocain block of the left splanchnic nerve by the method of Kappis. In the second attack the blocking of the left phrenic nerve was attempted as an experiment but without any success. On the basis of this experience the author is inclined to doubt the importance of the phrenic nerve in the conduction of pain and to conclude that in the production of shoulder pain the sympathetic system (splanchnic nerve) is more responsible.

BONN (Z)

**Johnson A A.** Pancreatic Disease—With Case Reports *J Iowa State M Soc* 1916 xvi 169

The author calls attention to the frequency of pancreatic lesions. In the Mayo Clinic they were found in 27 per cent of 4,000 cases of biliary tract disease.

Because of the protected location of the pancreas trauma rarely plays an important part in pancreatic lesions. This location however is unfavorable with regard to infections as the latter may reach the organ by direct extension through the blood or the lymphatic system or through the ducts.

The main cause of acute pancreatitis is infection which activates the ferments and causes self digestion of the tissues.

In 70 per cent of the cases the symptoms arise so suddenly and are so severe that a detailed history cannot be obtained from the patient. Pancreatic involvement is suggested by sudden pain in the epigastrium, faintness, and collapse associated with vomiting, retching and frequently jaundice. The diagnosis can be assured however only by seeing and feeling the organ.

While mild pancreatitis often becomes cured the incidence of recovery has been increased by surgical drainage.

WILLIAM F. SHACKLETON, M D

**Tower L E.** The Pathological Physiology of Experimental Gangrenous Pancreatitis *J Am M Soc* 1926 lxxvi 111

To reproduce in animals the clinical picture of acute pancreatitis it is necessary suddenly to devitalize a sufficient amount of pancreatic tissue to cause extensive necrosis and autodigestion of the gland.

As far as the author knows, no one has considered the possibility that the toxæmia in acute pancreatitis may be due to a severe local injury caused by the action of the protein split products on the musculature of the intestines and probably also on that of the vascular system.

All of the author's attempts to produce a sterile pancreatitis failed. Organisms were always found in one or more of the cultures taken from the peritoneal exudate, the gangrenous gland, localized abscesses, etc. However the presence of these

bacteria appeared to be merely incidental and due to the reduction in the vitality of the tissues caused by the violent toxæmia

In the experiments cited the omentum seemed to have a detoxifying power

Tower suggests that the toxæmia of acute pancreatitis acting on the gastro intestinal tract, may produce a toxæmia like that associated with paralytic ileus and that therefore the use of sodium chloride as advocated by Haden and Orr or the duodenal irrigation used in cases of high intestinal obstruction might prove more effective than the introduction of a drain into the pancreas

JACOB S GROVE M D

**Gutiérrez A** Implantation into the Stomach of a Pancreatic Fistula Following Cyst (Implantación de fistula pancreática consecutiva a quiste en el estómago) *Rev de ciruj* Buenos Aires 1925 14 223

The author reports the case of a 28 year old woman who for two years had had attacks of severe pain in the abdomen which at first was diffuse and then localized in the epigastrium and right hypochondrium and was accompanied by vomiting chills and fever She had also copious diarrhoea and her urine was scanty and dark There was no icterus but urticaria developed during the first attack Some of the attacks kept the patient in bed for as long as twenty five days About two months before she consulted the author she noticed a rather painful tumor in the right hypochondrium and the adjacent part of the epigastrium Since then the tumor had increased in size In the last two months she had lost 16 kgm in weight

Examination revealed in the right upper quadrant of the abdomen a smooth tumor which was freely movable transversely dull on percussion and surrounded by a tympanic area An area of tympany was found also between its upper margin and the liver The Wassermann test and urine and roentgen examinations were negative Because of the size and free mobility of the tumor a diagnosis of cystic tumor of the transverse mesocolon was made

At operation performed under general chloroform anesthesia an incision through the upper part of the right rectus showed the tumor to be partly above and partly behind the stomach Its upper segment was covered by the lesser omentum It had its origin in the pancreas and was independent of the liver It contained liquid The head and tail of the pancreas particularly the former showed marked induration The tumor was found implanted on the anterior surface of the isthmus of the pancreas

When the cyst was walled off and punctured 100 c cm of a citron yellow liquid was evacuated The gall bladder was displaced to the right by the cyst and was full of stones Poppert's cholecystostomy was performed The wall of the pancreatic

cyst was first sutured to the parietal peritoneum and then to the muscle skin layer The first sutures were of catgut and the second were interrupted sutures of silk The patient was discharged well on the thirty fifth day but had a fistula which discharged freely and was very troublesome

At a second operation the fistulous tract was explored with a sound and found to run backward and toward the midline of the abdomen An injection of lipiodol showed that it ran transversely at the level of the first lumbar vertebra Under chloroform anesthesia a sound was introduced into the fistula a silk suture was passed around it and it was closed A circular incision was then made around it and by vertical incisions it was exposed for its entire length It was followed down to the head of the pancreas The stomach was sufficiently prolapsed to expose the anterior surface of the pancreas

The decision was made to implant the fistulous tract a fibrous cord about the size of a lead pen into the stomach This was very easy on account of the ptosis of the stomach Closed Kocher forceps were introduced into the median part of the anterior surface of the stomach just beneath the fistula passed upward and outward and brought out just beneath the end of the fistula A part of the fistula was cut off enough being left to introduce into the stomach The forceps were then opened and an incision was made in the stomach wall between its blades The end of the fistula was pulled into the stomach with the forceps and fixed by means of a catgut suture passed through its wall and the stomach wall Its external surface was fixed to the upper opening in the stomach with four sutures of fine silk The lower opening was then closed with serous sutures A pad of omentum was placed beneath the free surface of the fistula where it came in contact with the stomach wall

The steps in the operation are shown in illustrations Healing occurred by first intention For several days the patient complained of nausea Within two months after the operation she had gained 5 kgm in weight

AUDREY G MORGAN M D

**Harris R I** Splenectomy for Purpura Haemorrhagica *Canadian M Ass* 1926 141 384

Essential thrombocytopenic purpura is differentiated from the other types of purpura by (1) a low platelet count (2) a prolonged bleeding time with a normal coagulation time (3) a positive capillary resistance test (4) failure of the clot to retract and (5) enlargement of the spleen

Infection plays a prominent part in the production of the obscure pathological changes which give rise to the disease

The most important though not the only factor causing the hemorrhagic condition is the thrombocytopenia

Splenectomy produces a symptomatic cure

HOWARD A McKNIGHT M D

## MISCELLANEOUS

Troell A. Comments on the Fahræus Reaction—the Stability of the Blood Suspension—in Acute Surgical Affections of the Abdomen  
*Acta chirurg Scand* 1926 lrv 523

On the basis of his experience in recent years and especially in eight cases which he reviews, the author maintains that in acute abdominal conditions of a doubtful and apparently mild type the surgeon can profit greatly by investigating the suspension stability of the blood by the Fahræus test, and in cases given expectant treatment he can profit by making this test repeatedly to determine whether the values are rising or falling.

While the Fahræus test is sometimes a better indication of the intensity of an infection than the leucocytosis, it cannot be regarded as an absolutely reliable indicator of the gravity of an inflammatory process in the abdomen particularly if the peritoneal irritation is of very recent development. In all of the author's cases of appendicitis and cholecystitis with a pathological increase in the Fahræus value—usually higher in the latter than the former because of the resorption of toxic products from a fairly large serous surface—the patient had been ill for at least forty eight hours.

Neuhof, H., and Cohen I. Abdominal Puncture in the Diagnosis of Acute Intraperitoneal Disease  
*Ann Surg*, 1926 lxxvii 454

Abdominal puncture for the diagnosis of acute intraperitoneal disease is done with the use of a spinal puncture needle and a 20 c cm syringe. Ethyl chloride locally or novocain is employed for anesthesia. The skin is opened with a scalpel at a point on a level with or below the umbilicus and at either side of the midline. The needle is introduced perpendicularly and aspiration is attempted in several different directions. Only a few drops of

fluid may be obtained, but this is often sufficient for a diagnosis. The theoretical danger of penetrating a loop should not deter the surgeon from taking advantage of this procedure, but it is not safe in the subacute or chronic case in which a loop of bowel might be adherent. A negative puncture has not been considered conclusive and if the symptoms justify surgical intervention such a finding has been disregarded. A positive puncture has prevented operation in a number of cases in which it would otherwise have been employed. A careful bacterial and cytological examination of the fluid obtained is as important as the finding of the fluid.

In a group of traumatic cases the presence of blood or fluid as indicated by puncture was proved by subsequent laparotomy. In a group of cases of pneumococcus and streptococcus peritonitis the discovery of the organism on abdominal puncture prevented an unnecessary laparotomy. The finding of fluid the color of beef juice and containing polynuclear leucocytes but no bacteria has decided the diagnosis of acute pancreatitis and the withholding of operation.

WILLIAM J. PICKETT M.D.

Ghose D. M. A Case of Persistent Hiccough Treated Successfully by Injections of Novocain into the Phrenic Nerve  
*Indian M J* 1916 lvi 124

In the case of a patient who was in a state of extreme prostration from hiccoughing for almost four months the author infiltrated the phrenic nerve with from 2 to 4 c cm of a  $\frac{1}{2}$  per cent novocain solution. The first injection made on only one side, caused transient pain in the shoulder and chest on that side. On the following day, 3 c cm of the novocain solution was injected on the opposite side. After three injections there was some improvement and after six injections the hiccough ceased completely. The technique of Kroh was used.

JOHN A. WOLFER M.D.

# GYNECOLOGY

## UTERUS

**Ulesco Stroganowa** **K.** Endotheliomata of the Uterus (Die Endothelome des Uterus) *Arch f Gynaek* 1925 cxviii 802

The morphological and histogenetic characteristics of the endotheliomata of the uterus are due to the origin of these tumors from the endothelial and adventitial elements of the blood vessels. On the basis of studies of nine such tumors—three of the corpus and six of the cervix—the author distinguishes endothelioma carcinomatodes, sarcomatodes, and sarcocarcinomatodes in addition to cases of excessive blood vessel development resulting in lympho- or hæmangio endotheliomata according to the vessel of origin.

As the literature does not report all epitheliomatous tumors, they are perhaps more common than is generally supposed. To this group belong the tumors described by Fellaender as 'elefantiasis endometrii fibrosarcomatosi gigantocellulare' and also others described as giant cell polymorpho cellular and botryoid sarcoma.

In all of the cases studied by the author an undoubted relationship was apparent between the tumor elements and the vessels from whose endothelium or adventitia the tumor developed. In some of the cases the endothelioid character of the cells predominated so that the tumor had an epithelial or carcinoma like character while in other the admixture of other forms which were more characteristic of connective tissue suggested a sarcoma.

The power of the endothelial and adventitial cells to react to inflammatory stimulation in various forms was shown by an astonishing polymorphism of the tumor cells. Epitheliomata of the cervix are characterized by the predominance of large epithelioid cell forms which in addition to polymorphism are distinguished by very numerous mitotic figures. In these tumors there may be also small elements no larger than leucocytes or large elongated multinuclear cells. The tumor tissue formed from the elements and their transitional forms is arranged in centers and columns sometimes in reticular foci and sometimes in larger masses penetrated by a network of thin walled blood vessels and capillaries.

In tumors of the corpus there are found besides cords of epithelioid and often multinuclear cells similar to those of tumors of the cervix cords of spindle and oval cells. These give the neoplasm more of a sarcomatous character but because of their undoubted origin from endothelial and adventitial elements the tumors must be classed with the endotheliomata.

The frequently multinucleated and often very large cells found in endotheliomata also have their origin in endothelial and adventitial cells. Within the vessels they are formed either by mitotic or amitotic nuclear multiplication or by the syncytial confluence of endothelial cells a process in which leucocytes and the remains of cell nuclei and red blood cells are not infrequently surrounded. This content of blood corpuscle material explains the pink color of the giant cell like structures so formed a finding frequently mentioned by the author in his description of the different tumors. Sometimes the syncytial masses so formed show branches which retain the shape of the vessels.

The details of the descriptions cannot be given in an abstract without the illustrations.

In conclusion the author cites a case in which death occurred from peritonitis immediately after radium treatment. FLESCH (C)

**Lynch F W.** The Treatment of Squamous Cell Epithelioma of the Cervix. *Surg Clin N Am* 1926 vi 333

In the author's opinion the ordinary panhysterectomy in the treatment of squamous cell carcinoma of the cervix is to be condemned. The radical dissection of Wertheim is better but because of its technical difficulty and high primary mortality is not generally employed. Radium offers a much better chance of a five year cure than surgery or the cautery.

In cases in which the carcinoma is limited to the cervix and the operative risk seems good a preliminary irradiation of about 3000 mc hrs should be given and followed from two to four weeks later by a radical excision. All other cases should be treated with radium alone. Some surgeons use radium alone in all cases but reports collected by the author indicate that when the condition is operable the incidence of five year cure was about 50 per cent in cases treated surgically as compared with 36 per cent in those treated with radium alone.

I EDWARD BISHAW M D

**Rud H.** A Histological Investigation of a Case of Cancer of the Cervix of the Uterus Cured Locally by Radium and X Ray Treatment. *Acta obst gynec Scand* 1925 iv 66

The author reports the clinical course and autopsy findings in the case of a patient who was clinically cured of cancer of the cervix by radium and X ray treatment and died of an intercurrent disease.

Autopsy showed macroscopic healing of the process in the uterus, vagina and left parametrium but remains of the tumor were found in the right parametrium.

On microscopic examination of the organs, cancer cells could not be demonstrated in the uterus, vagina, rectum, bladder left parametrium or left ovary.

Remains of cancer tissue showing degenerative changes were still present in the right parametrium and right ovary.

The tissue treated by irradiation showed also an increase in the connective tissue, the occurrence of hyaline areas and fibrinoid necrosis in the muscles and thickening and obliteration of vessels the walls of which showed hyaline and fibrin like tissue. The mucous membrane of the uterus and vagina in the neighborhood of the cancer site was atrophied.

Ward, G. G. and Farrar, L. K. P. The Radium Treatment of Carcinoma Uteri. *Am J Obst & Gynec* 19 6 41 430

The authors state that for the purposes of comparative study, a standardized simple classification of carcinoma of the uterus according to the extent of the disease and the same rules in estimating end results and percentages should be adopted by all clinics.

A monthly follow up conducted by the surgeon in charge of the patient is of inestimable value for successful radium treatment. The details of technique are of importance. Over radiation is especially to be avoided and subsequent treatment should be based upon the reaction to the test dose of radium. In the authors' experience, repeated irradiations (three or more) have been of distinct value in certain advanced cases.

In all classes of carcinoma of the cervix radium is preferable to surgery. As life can be saved by radium in at least 50 per cent of the early cases of carcinoma of the cervix the education of the laity and general practitioners to seek an early diagnosis is imperative. Carcinoma of the fundus is best treated by surgery but in many cases resort must be had to radium and roentgen ray therapy because the operative risk is high.

For satisfactory results it is unnecessary to use large amounts of radium. The value of roentgen ray therapy in carcinoma of the uterus is still undetermined. Every case should be treated according to its particular requirements.

E. L. CORNELL M.D.

Voltz, F. Carcinoma of the Cervix Treated Exclusively by Irradiation (Die ausschliessliche Strahlenbehandlung des Collum Carcinoms). *Klin Wchschr* 19 5 14 1396

On the basis of material from the Munich Gynecological Clinic during the years 1912 to 1919 it is shown that irradiation of carcinoma of the uterus is as effective as operative treatment and sometimes even more effective. To the cases in which a five year cure had been obtained up to the year 1918 which have been reported previously are added the cases with a five year cure which were treated during the years 1918 and 1919.

There were 313 cases of carcinoma of the cervix. Of these 271 were treated and forty two were unsuitable for treatment. Since 1918, radium treatment has been combined with roentgen treatment. In the total number of cases the incidence of cure was 12.4 per cent, while in those remaining after the subtraction of the untreated cases it was 14.3 per cent. The results in the four groups were the following:

Group 1, thirty seven operable cases, a cure in sixteen (43.2 per cent). Group 2, seventy four borderline cases, a cure in fifteen (20.2 per cent). Group 3, 106 inoperable cases, a cure in eight (7.5 per cent) and Group 4, ninety six unsuitable cases, no cures in the fifty four which were treated.

In 755 cases of carcinoma of the cervix treated in previous years an absolute cure was obtained in 13.2 per cent and a five year cure in 43.6 per cent of those which were operable. In the total number of cases of carcinoma of the cervix treated by irradiation which have been reported in the literature—1,823—Voltz estimates that an absolute cure was obtained in 16.9 per cent and a relative cure in 41.6 per cent of those which were operable. In contrast to this he estimates for 2,185 cases of carcinoma of the cervix an absolute operative cure of 26 per cent and a cure in a total of 39 per cent of the cases operated upon.

Accordingly the figure for absolute cure by irradiation is lower but this is explained by the fact that the total material was poorer since in the older operative cases the average operability was 64 per cent whereas in the irradiated cases it was only 19.3 per cent. The poorer quality of the material is explained by the fact that many cases which previously were regarded as beyond treatment were sent to the Clinic for irradiation.

Worthy of note is the five year cure obtained in 10.1 per cent of 1,778 cases of inoperable carcinoma of the cervix collected by Voltz from the literature which were treated by irradiation. Attention is called also to the so called optimal cure figure that is the result obtained when the patient submitted to a complete course of treatment. In Group 1 this was 74.8 per cent, in Group 2 41.2 per cent, and in Group 3 13.1 per cent.

The author believes that by further development in the technique and methods of irradiation the results may be further improved particularly by irradiation of the hypophysis, exact dosage, and the reduction of irradiation sickness by the use of irradiation cabinets.

MARTIN (C)

## ADNEXAL AND PERIUTERINE CONDITIONS

Pettinari, V. The Ovarian Graft and Its Application to Treatment in Clinical Cases (La greffe ovarienne et ses applications à la thérapeutique humaine). *Gynec et obst* 1926 XII 19

Experiments performed by the author on 33 animals of various species showed that ovarian tissue transplanted in animals of the same species can



be made to live elaborate the normal internal secretion and assume the germinal function. The likelihood of a successful take increases with descent in the biological scale.

The normal histological condition of some of the author's grafts is shown in illustrations. Follicle formation and the presence of corpora lutea were noted. The formation of corpora lutea was seen chiefly in the autoplasmic grafts whereas in heteroplasmic grafts follicle atresia was the rule. In the homoplasmic type the tendency was in the balance.

The ovarian secretion which exerts the chief influence on female morphology and physiology cannot be replaced by other internal secretions but can be resupplied by grafted tissue.

The relation of the ovarian secretion to the various mammary, uterine and other cycles has not yet been established but it is known that ovarian secretion is necessary for the maintenance of these cycles. Nervous disorders influence sexual function by modifying the endocrine action of the ovaries.

A successful graft will prevent the appearance of the usual effects of castration and will carry the organism to its complete sexual development. In old animals it causes a profound psychic and somatic change.

In the transplantation of ovarian tissue in clinical cases the receptor is too often in poor general condition the area in which the graft is placed is diseased or unsuitable or the grafted tissue is unsatisfactory.

The following conditions may be favorably affected by an ovarian graft: (1) infantilism of the genital organs; (2) the pathological menopause due to castration; (3) dysovarianism and ovarian insufficiency; (4) ovarian sterility; (5) plunger glandular endocrine syndromes; and (6) certain mental afflictions.

In the human female autoplasmic transplants give the best results but homoplasmic grafts have occasionally proved satisfactory. Grafts are used to stimulate impotent ovarian tissue as well as to replace removed or destroyed tissue.

Ovarian grafts have great therapeutic possibilities and with increased knowledge and improvement in technique their use will become more general in the treatment of conditions not amenable to other ovarian therapy. At present they should be used with discretion.

GOODRICH C. SCHAUFLER M.D.

**Boiling R. W.** An Ovarian Cyst Free in the Peritoneal Cavity of Three Months Old Infant  
*Ann. Surg.* 1926 LVIII 546

The author reports the case of an infant 3 months old who had vomited and lost weight since birth. In the right lower quadrant of the abdomen there was an elastic mass about the size of a golf ball. At operation the mass was easily delivered and rolled out of the wound as it had no attachment. Examination revealed a normal uterus with a normal ovary and tube in the left side but no ovary or tube on the right side. The mass was a multilocular ovarian cyst

which had become separated from its attachment as the result of torsion. The patient recovered.

I. EDWARD BISHAW M.D.

**Shaw W.** Krukenberg Tumors of the Ovaries  
*Proc. Roy. Soc. Med. Lond.* 1926 LXI Sect. Obst. & Gynec. 49

Krukenberg tumors of the ovary were first described by Krukenberg in 1896. They are bilateral tumors which may occur at any age. Their growth is slow and accompanied by ascites. They retain the normal shape of the ovaries and have a smooth surface.

Histologically the stroma consists of fibrillar in the form of spindles with oval nuclei densely packed together. Also predominating are round or oval cells with bright translucent homogeneous protoplasm and nuclei pushed to one pole and flattened out against the cell membrane giving a signet ring appearance. Krukenberg believed the tumors to be fibrosarcomatous in type. Later other investigators found them associated with carcinoma of the stomach. The author reports five cases.

In view of the fact that in the vast majority of the reported cases carcinoma was discovered in the stomach it is probable that the ovarian tumors are secondary carcinomata rather than primary fibrosarcomata.

I. EDWARD BISHAW M.D.

**Princeteau and Magnan.** Simultaneous Rupture of Both Fallopian Tubes (Rupture bilatérale simultanée des deux trompes utérines). *Bull. Soc. d'Obst. et de Gynec. de Par.* 1926 XV 55

The patient whose case is reported was a woman 22 years of age who was admitted to the hospital on November 7, 1925, complaining of pain in the lower part of the abdomen and a bloody vaginal discharge. She had had one pregnancy sixteen months previously. Her last regular menstrual period began July 30, 1925. In the evening of that day she had an attack of sharp pain in the lower part of the abdomen, vomiting and syncope which persisted until the following day. Her condition then improved and she was able to get out of bed, but on the third day the attack recurred. A physician called two weeks after the onset advised immediate operation.

On the patient's admission to the hospital her temperature was 37.9 degrees C. and her pulse 100. Examination revealed a chocolate colored vaginal discharge, tenderness in the lower abdomen and a mass in each iliac fossa. The cervix was soft and patulous. A diagnosis of ectopic pregnancy on the left side with dextroflexion of the uterus was made.

Operation revealed on the right side of the pelvis a bluish mass the size of two fists and on the left side a swollen fallopian tube with a perforation about 2 cm. in diameter from which blood was escaping. The mass on the right side was apparently a hematocoele. It could not be removed completely as it seemed to be attached to the rectum. A left salpingectomy and a subtotal hysterectomy were performed.

SALVATORE DI PALMA M.D.

## EXTERNAL GENITALIA

Watson, B P A Technique for the Operative Treatment of Rectocele *Edinburgh M J* 1926 ns xxviii Edinburgh Obst Soc 61

The essential feature of Watson's operation for rectocele is the isolation and repair of the special fasciomuscular sheet which supports the rectum and in all cases of rectocele is deficient. This rectal fascia is a broad strong sheet of musculo-fascial tissue in close relation to and supporting the anterior rectal wall and lying deep to the levator ani muscle. It is in intimate relation to the posterior vaginal wall in its middle third and becomes continuous at the sides of the cervix with the fascial layer which is the main support of the bladder. Rectocele is the result of injury to this fascia.

In the operation described an incision is made through the mucocutaneous juncture round the poste-

rior part of the vulvar orifice. In the elevation of the flap from the posterior vaginal wall blunt scissors are used. Each side is opened and held up by forceps so that the median scar can be seen and can be dissected away without injury to the rectum. Two bands are found attached to the flap which do not wipe away easily and represent the torn rectal fascia. Below this and on each side is the mass of levator muscles and fascia which, in the usual operation are joined together by interrupted sutures as a rule under considerable tension. In the author's operation a deep bite is taken into the fascial sheath above the upper margin of the rectocele on each side and when this suture is tied the fascia is overlapped above the rectum. A continuous suture is usually employed.

In addition to curing the rectocele, the fascial union restores the support of the pelvic floor.

HARRY W LINK, M D

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

**Kupfer M** Ovarian Pregnancy Following Operation for a Tubal Pregnancy on the Same Side (Ovarialgravidaet nach gleichseitiger operierter Eileiterschwangerschaft) *Zentralbl f Gynaek* 1925 xlix 2241

Kupfer reports the case of a 26 year old woman who had been operated upon for tubal pregnancy on the left side and upon whom he operated for a suspected extra uterine pregnancy. At the second operation a large quantity of dark blood was found in the abdominal cavity. The left ovary had been transformed into a tumor the size of an egg. The stump of the left tube which was 1 cm long was not connected with the ovary. The right adnexa were normal. Extirpation of the left ovary was followed by uneventful recovery.

The specimen showed evidence of a fetal sac. No histological examination was made. The author assumes that there was an external migration of the spermatozoa but admits that patency of the stump of the left tube could not be ruled out definitely.

VON WEINZIERL (G)

**Von Bod6 R** and **Liebmann S** Investigations Regarding the Calcium Ion Concentration of the Blood in Puerperal Eclampsia (Untersuchungen ueber die Calciumionkonzentration des Blutes bei puerperaler Eklampsie) *Arch f exper Path u Pharmacol* 1925 cix 178

The authors examined the blood serum of women with eclampsia for ionized calcium according to Trendelenburg's method of perfusing the frog's heart. These studies followed those of Lamers Rissmann and Kehrer who found the calcium content of the blood lowered in eclampsia and attributed the convulsions to a calcium hypotonia.

In the authors investigations sera which had been kept on ice for twenty four hours were tested on the isolated frog's heart. If a reduction of the contractions occurred further tests were made to determine whether the addition of calcium ions would prevent such a reduction. The serum first tested was obtained from thyroidectomized dogs in which tetany had been produced by the removal of the parathyroids.

It was found that the normal contractions of the frog's heart perfused first with Ringer's solution were decreased when the serum of the parathyroidectomized dogs was added whereas when calcium ions were added to the serum (0.1 calcium chloride solution with 0.16 mgm calcium chloride to 1 c cm of the tetany serum) the contractions returned to normal.

In experiments with the serum of normal pregnant women and women who had been recently

delivered the contractions of the heart muscle remained normal and no decrease in the calcium content could be demonstrated. Neither was a calcium hypotonia found in the serum of nine eclamptic women whose serum had as little effect on the frog heart as that of normal pregnant and puerperal women. Therefore a decrease in the free calcium ions in the blood which might be responsible for the convulsions could not be demonstrated in puerperal eclampsia. SCHMIDT (G)

**Lindquist S** Retention for Nearly Twelve Months of a Mature Fetus in a Uterus Which Is the Seat of a New Pregnancy (Third Month) *Acta obst et gynec Scand* 1925 iv 187

The patient whose case is reported was a para iv with a normal history who during her fifth pregnancy felt fetal movements after the fifth month but ceased to feel them during the ninth month. When she was first seen by the author she had not felt fetal movements for eight days. She refused intervention.

When she returned two months later the fundus seemed smaller and the upper right portion of the uterus seemed to be divided from the lower portion by a sulcus. She again left the service against advice and was not seen again until twenty months from the onset of the pregnancy. On her return she stated that she had had one normal menstrual period six months previously and another four months previously.

Laparotomy revealed a uterus with two parts having no demonstrable connection. The upper and larger part contained a macerated and apparently full term fetus and the lower and smaller portion a fetus about 14 cm long.

GOODRICH C SCHAUFLER M D

**Commandeur Eparvier** and **Michon** Cancer of the Cervix and Pregnancy. Cesarean Section. Porro's Amputation. Radium Therapy (Cancer du col utérin et grossesse césarienne amputation de Porro curiethérapie) *Bull Soc d obst et de gynec de Par* 1926 xv 59

The patient whose case is reported was a 40-year old woman who entered the obstetrical clinic at Lyons in the seventh month of pregnancy with a cancer of the cervix. Examination revealed considerable hypertrophy of the cervix and the exploring fingers became blood tinged. There was a slight induration in the right vaginal cul de sac.

Three weeks after the patient's admission to the hospital she began to lose blood. During the night of August 21 she had a vaginal hemorrhage. Following a classical cesarean section in which a living female infant was delivered Porro's amputation

was done immediately and the abdominal wall closed. The postoperative course was without incident.

Fifteen days after the operation the cervix was dilated and two tubes of bromide of radium of 50 mgm each were inserted from the abdominal opening. In the pericervical vaginal site, three tubes of 25 mgm were placed in a circular drain around the cervix.

Three weeks after the application of the radium, examination showed complete disappearance of the cervical tumor and only slight induration in the anterior cul de sac.

No mention is made of a microscopic examination of the tumor. SALVATORE DI PALMA, M.D.

Michel Fruhinsholz and Mathieu. Cancer of the Cervix and Pregnancy Hysterectomy in the Fourth Month. End Result. (Cancer du col et grossesse hystérectomie au 4<sup>e</sup> mois résultat éloigné). *Bull Soc d'obst et de gynec de Par* 1926, xv 106.

The case reported by the authors was that of a woman 40 years old who had had four children, all of whom died shortly after birth. On July 25, 1921 when the patient was in the fourth month of pregnancy she entered the hospital on account of marked leucorrhoea. A diagnosis of malignant new growth of the cervix was made and a Wertheim hysterectomy performed. The parametrium was not invaded.

Convalescence from this operation was normal, and the patient left the hospital a month later in excellent condition. On December 28, 1921 she returned on account of a bloody vaginal discharge. Examination then revealed an indurated mass at the end of the vagina. Curettage of this mass was followed by the application of radium.

On April 10, 1925 the patient again returned to the hospital with a bloody vaginal discharge. Examination revealed a small crater like induration at the end of the vaginal stump. A second application of radium was given.

In December, 1925, four years and four months after the hysterectomy, the patient is in excellent condition. The vagina is smooth and shows no ulcerations. A small nodule the size of a pea in the posterior part of the vagina the authors believe is a scar.

No mention is made of a microscopic examination of the neoplasm. SALVATORE DI PALMA, M.D.

## LABOR AND ITS COMPLICATIONS

Esch, P. The Occurrence of Brain Pressure and Its Effect upon the Fetal Heart Sounds During Labor. (Ueber das Zustandekommen und den Einfluss des Hirndrucks auf das Verhalten der kindlichen Herztoene waehrend der Geburt). *Monatsschr f Geburtsh u Gynaek* 1925 lxx 308.

There are two types of brain pressure. One is the acute type which is due mainly to mechanical factors such as pressure or a blow upon the brain

and may occur during operative delivery or the sudden descent of the infant through a narrow pelvis. The other is a gradually developing type which is due to a disturbance in the circulation of the blood such as venous stasis or obstruction of the arterial supply which causes cellular injury.

The acceleration of the heart sounds resulting from cerebral pressure the author attributes chiefly to vagus irritation rather than to a carbon dioxide overload such as occurs in general asphyxia. Whereas in acute cerebral pressure a rapid recovery of the heart sounds is to be expected the author believes that when cerebral pressure is manifest an attempt should be made to terminate the labor just as in cases of slowing of the heart due to an overload of carbon dioxide.

However if the prerequisites for a forceps delivery have not been met, there is danger that a forced delivery may cause an increase in the cerebral pressure which will prove serious for the child. Consequently the danger of waiting until the indications for a forceps operation become apparent seems to be less than that of forcibly ending the labor at once. HENNICKE (G).

Polak, J. O. The Technique of Transperitoneal Cesarean Section. *Surg, Gynec & Obst*, 19 6, xlii 551.

To decrease the danger of cesarean section, pelvic disproportion or fetal malposition must be recognized either before or immediately at the beginning of labor. In the borderline case with but slight disproportion and only slight deflexion of the vertex, good obstetrical judgment is particularly necessary.

Since over 80 per cent of labors in cases of borderline contraction terminate spontaneously or can be terminated with the aid of low forceps, it is well in these cases to allow the woman to have a moderate test of labor. This is best given in bed, the patient's strength being conserved by rest, the free use of morphine and scopolamine, forced feeding, and the forced ingestion of fluids. During this preliminary test the character of the contractions, the contour of the uterus, the pulse, the temperature, the progress of descent, and the amount of dilatation should be carefully checked.

If there is no evidence of advance or no apparent increase in the dilatation of the cervix, a careful vaginal examination with the bladder empty should be done and an attempt made to crowd the perfectly flexed head into the brim. If there is much over-riding or if the consistency of the head and sutures show that the head cannot be crowded in, cesarean section is indicated.

Prior to the induction of anesthesia in such a case the patient should be given an intravenous injection of 250 c.c. of a 10 per cent glucose solution. In the preoperative preparation of the genital organs, 1 oz. of a 4 per cent solution of mercuric chrome should be slowly injected into the vagina while the hips are elevated on a sterile douche pan. This should be done at least thirty minutes before

of life and growing slowly. A large percentage enlarged with breaking down of the capsule and general invasion of the gland. In 25 per cent of Wood's forty nine cases the tumor became malignant and in 45 per cent a recurrence followed the removal of the malignant growth. Complete removal while the tumor is still encapsulated will result in a cure in practically every case (Sistrunk).

Under local anesthesia Grove makes an incision along the horizontal branches of the facial nerve isolating the nerve branches and continually keeping them under view during the dissection of the tumor. He reports three cases.

In the first case a tumor the size of a hen's egg had been present for twenty years. It was firmly fixed in front of the right ear and in the past six months had increased in size. In the second case there was a tumor the size of an almond of six months duration and in the third case a small tumor of one year's duration which had grown rapidly during the past six months.

These growths were all enucleated under local anesthesia by incisions along the branches of the seventh nerve the nerve being carefully isolated and kept in view during the dissection. No facial paralysis resulted from the procedure.

HARRY C. SALTZSTEIN, M.D.

## EYE

Schild E. H. An Unlearnable Prism Test for Suspected Malingering. *Am J Ophth* 1926 35 1x 741

The prism used in the test described by Schild is a small piece of rectangular glass measuring about 1 by 2 in. one half of which is a rather thick plano and near the center tapers off to a prism of 5 degrees for the other half. It is very important that the base line of the prism which runs across the middle of the glass should be as sharp as possible to make an abrupt change to the prism side.

A suitable test object is provided. Ordinarily any small bright object against a plain background will do except an electric light bulb or other bright light. A small white visiting card is best.

With this glass one may produce the effect of either a plano, a double prism or a single 5 degree prism depending upon the way it is held. If it is held so that the prism end is up and the dividing line is just above the pupillary border the view will be through the plano part. This is Position 1. By lowering it so that the dividing line runs midway across the pupil the effect of a double prism is obtained. This is Position 2. Lowering it again so that the dividing line is below the edge of the pupil gives the effect of a single 5 degree prism with the single image displaced upward. This is Position 3. The shifting from Position 2 to Position 3 is the critical stage of the test and must be done at the moment when the subject has both eyes open and his attention distracted so that he will not notice the change.

The examination deals entirely with the good eye. If the patient shows signs of memorizing his replies the position of the glass must be secretly reversed.

L. L. McCoy, M.D.

Irons E. F. and Brown E. V. I. Recurrence of Iritis as Influenced by the Removal of Infections. Summary of Fifty Cases. *J Am M Ass* 1926 lxxvii 1167

Zentmayer W. The Prostate as a Remote Focus of Infection in Ocular Inflammations. *J Am M Ass* 1926 lxxvii 1172

Mills L. Ocular Disease Occurring in the Course of Non Dysenteric Amoebiasis. *J Am M Ass* 1926 lxxvii 1176

IRONS and BROWN report the late results in fifty cases of iritis from three to twelve years after treatment. In forty three there had been no recurrence.

In seventeen of the cases the iritis was attributed to tonsillar infection and in thirteen of these the tonsils were removed. In ten cases infected teeth were believed responsible and were extracted. In two cases anti-syphilis treatment was given and in two others tuberculin was used. In the remaining cases the underlying condition was a genito-urinary infection or a combination of various conditions with tonsil and dental infection or was not determined.

Of the seven patients in whom the iritis recurred one refused to allow the removal of badly infected tonsils. In the case of another treatment for lues was given and an infected tooth extracted but infected tonsils were not removed. Two of the patients with recurrences had gonorrheal prostatitis and arthritis. A fifth patient had a generalized infection associated with sinusitis and the sixth an apparently healed pulmonary tuberculosis and a severe episcleritis. Both of these developed keratitis. The seventh reacted to tuberculin but refused to remain under observation for a sufficient length of time for adequate study.

ZENTMAYER reports in detail four cases of ocular inflammation in which the prostate seemed to be the source of the infection.

In the first case there had been repeated attacks of gonorrheal arthritis and iritis. The sight of the right eye had been lost as the result of secondary glaucoma. In the left eye in spite of an iridectomy during an attack of acute glaucoma vision had decreased to 1/10. Prostatic massage and the use of stock and autogenous vaccines seemed to make the eye condition worse.

The second case was that of a man 50 years old who had prostatitis. On two occasions in this case prostatic massage was followed by an attack of acute iritis.

The third case was that of a man 26 years old who gave a history of gonorrheal urethritis and arthritis nine years before the iritis. Four years later he had a very severe recurrence of iridocyclitis and a diagnosis of prostatitis was made.

The fourth case was one of central exudative retinochoroiditis occurring in a man who showed no other lesion except prostatitis.

Zentmayer cites also three cases of vesicular keratitis in men with a history of gonorrhœa. He draws the following conclusions

1 The prostate may be the source of infection in certain ocular inflammations

2 The prostatic infection is usually non gonococcal

3 The metastasis as in other focal infections, may occur in any of the ocular tissues susceptible to inflammatory reaction, but the uvea and cornea are probably involved most often

4 The fact that an inflammation persists after the removal of a suspected focus does not prove that this focus was not the primary source of the infection the inflammation may have so reduced the resistance of the tissues as to render them unable to withstand the action of much less virulent organisms or toxins from some other part of the body

5 Only the subsidence of a metastatic inflammation after the removal of a possible source of infection proves that this source was the exciter of the condition

MILLS reports eight cases of ocular inflammation associated with intestinal amœbiasis in which the eye condition was relieved by the treatment of the amœbiasis. He believes that many more cases would be found if laboratory workers were familiar with intestinal protozoa. The conditions in the cases reported were iritis associated with migraine like headache and gastro intestinal symptoms, iridocyclitis persisting for eighteen months and associated with arthritis and a history of gonorrhœal infection bilateral iritis persisting for ten months bilateral iritis persisting for five years severe conjunctivitis and episcleritis of eleven weeks' duration recurring attacks of sclerosing keratitis for six years, iritis persisting for six years and causing blindness from secondary glaucoma and choroidal atrophy of one eye and recurrent iritis in the other eye

Also reported are three cases of retinal hemorrhage, one case of incipient cataract two cases of glaucoma simplex, and three cases of retinal detachment which were favorably influenced by the treatment of associated amœbiasis

Mills agrees with Malling that many cases of so called primary glaucoma are in fact secondary as is often shown by the findings made with the slit lamp. He has noticed that synechiæ are frequently not marginal but arise from the surface of the iris or the ciliary body

A large percentage of chronic ocular conditions which resist local treatment are associated with intestinal infection by protozoa or flagellates causing colitis. In most of such ocular conditions treatment for the amœbiasis has resulted in relief arrest or cure of the eye condition. Emetin may be of value also in iritis due to other causes. Any chronic or recurrent or intractable ocular disease in which the elimination of focal infection and correction of the diet is not of benefit should be treated as a parasitic intestinal infection

SAMUEL A. DURR, M.D.

## EAR

Goldstein M. A. The Relation of Tactile Impression and Hearing Perception. *Laryngoscope*, 1926 xxxvi 79

Goldstein traces the development of the sensory organs in animals from the lower to the higher types. The embryological derivation of the auditory organ is considered. The purpose of the discussion is to outline embryologically and phylogenetically the relationship and gradual development of the general touch sense to its most complicated mechanism of special sensory organs and especially to the auditory organ in the mammalia and in the human species

The lower the anatomical, physiological, and economic zoological rank of the animal the simpler and more rudimentary are its sensory organs

The statement has not yet been challenged that light, heat, sound, and electricity are modifications of the same wave of motion varying in intensity, quality, and direction. In functional hearing tests of both the normal and the deaf subject it has been very difficult to determine where an auditory impression ceases and where a tactile impression begins, or to what degree one sensory impression may be translated into terms of the other

Goldstein cites the case of a congenitally deaf girl who became so highly sensitized that she was able, blindfolded, to receive and repeat entire sentences heard through an ordinary megaphone, the distal end of which was spanned by a tense diaphragm of Whatman paper with which the tips of her fingers were in contact

In conclusion the author states that there is much promise in the use of apparatus embodying radio and telephone principles for the amplification of sound

A. R. HOLLENDER, M.D.

Tait J. Ablation Experiments on the Labyrinth of Frogs. *Laryngoscope* 1926 xxxvi 713

In his experimental work on the frog the author observed that when one or both saccular otoliths are removed or when the nerves to the saccular maculae are cut, the result so far as equilibrium is concerned is very clear and definite. The animal sits, crawls, jumps swims absolutely normally. These negative results in normal behavior confirm previous work on fish by Parker and Maxwell and on frogs by Laudenbach which showed that the saccular macula at least of these lower forms of animal life, is not in any way concerned with equilibrium

The utricular macula is wholly an organ of static equilibrium. When the frog assumes stationary postures on an inclined plane the head tends to be kept horizontal while the center of gravity of the body is plumb within the base of support formed by the four limbs. These stationary postures which vary with the degree of inclination of the plane on which the frog rests, constitute reactions of static equilibrium. In taking up the appropriate pose the

animal depends on nervous messages derived from four possible sources (1) pressure impulses due to contact with the ground (2) impulses from muscles and joints (3) impulses from the eyes and (4) impulses from the utricular macula.

So far as the body and limbs of the frog are concerned the saccular macula has nothing to do with equilibrium. The utricular macula is the organ of static equilibrium and is concerned in the adoption and maintenance of appropriate postures in response to gravity.

The semicircular canals are for kinetic equilibrium. The static reactions are manifested only when the animal stands still.

Upon semicircular function depend appropriate responses to counteract sudden tiltings and jerkings. The canals are called into action by something sudden; their effect is momentary and evanescent. The plumb line mechanism responds to a steady held of force; its action is sluggish but its effect is sustained. This fact is somewhat reminiscent of the difference between an induced and a constant electric current.

The differential diagnosis of lesions of the canals depends upon a knowledge of their individual function.

Bárány's tests are reviewed. Bárány's method proves that stimulation of the canals is due to movement of the endolymph within them but is complicated and not wholly satisfactory.

The horizontal canals are brought into action in rapid turning movements about a vertical axis. Experiments have proved that when the normal frog is quickly rotated toward the right it is the horizontal canal on that side that is stimulated. If the lesion is on the left side the frog will fail to respond when turned toward the left.

The vertical canals are brought into operation in rapid tilting movements about horizontal axes. From experiments with frogs the conclusion is drawn that each vertical canal is especially associated with the limb of that quarter of the body toward which it points. It was noted also that whereas a vertical canal is specially associated with one particular limb stimulation of a horizontal canal leads to movements of at least two and usually of all four limbs.

Deaf mutes on the Bárány chair have no trouble in detecting even a low rate of angular acceleration and in indicating its direction. Occasionally however one finds a patient who shows obvious disability; his threshold is high and his answers are incorrect. Two such patients were examined. Both had acquired bilateral labyrinth trouble as a result of meningitis. These patients when tested on the tilt table showed a behavior analogous to that of a completely decanalized frog. Other deaf mutes who were examined reacted on the tilt table in the same way as normal persons. When a patient was found defective by the very simple Bárány test he showed disability also on the tilt table.

A. R. HOLLENDER M.D.

Blehl C. Perforation of the Fenestra Rotunda for Therapeutic Purposes. *J Laryngol & Otol* 1916 xli 637.

Liedler R. The Indications for Opening the Labyrinth. *J Laryngol & Otol* 1916 xli 641.

In discussing the function of the fenestra rotunda BIEHL calls attention to the fact that the tympanic membrane and the obturator of the fenestra ovalis the plate of the stapes, have a muscular movement whereas the movement of the membrane of the fenestra depends on changes within the labyrinth changes of pressure. Hence the fenestra rotunda is influenced by the quantity of fluid in the labyrinth and the reactions which these fluids undergo. It is certain that an increase of pressure in the labyrinth can be diminished by an operation on the fenestra ovalis.

When the fenestra rotunda is perforated the increase of fluid, of pressure altogether will have its effect on the vestibular side and will be manifested there only if the membrane of the fenestra cannot produce the effect.

The function of the membrane of the fenestra rotunda is twofold—adjustment of the mechanical effect which requires a certain amount of flexibility and adjustment of the acoustic effect which requires a certain rigidity with regard to these extremes.

In conjunction with the vestibular apparatus the fenestra rotunda has a mechanical action but in conjunction with the cochlear apparatus its action is an acoustic tension which will be at its strongest if the membrane is taut. In addition to these functions the fenestra rotunda has by reason of its fibrous membranous structure the capacity to diffuse and in this way to influence the process within the labyrinth.

Disturbances in the internal ear caused by over pressure can be removed or diminished only by perforating the fenestra rotunda.

LIEDLER agrees that the question as to when we ought to operate on the labyrinth is still far from satisfactorily answered, but states that in his opinion operation is indicated when the patient is suffering from chronic or acute otitis media with symptoms of diffuse acute inflammation of the labyrinth that is to say deafness, nystagmus of the third degree on the healthy side and lack of response to the turning caloric and fistula tests and at the same time there are symptoms of intracranial complications (a temperature over 38 degrees C, headache and possibly positive signs in the cerebrospinal fluid). It is indicated also in cases of acute or chronic otitis media in which the labyrinth is completely deranged functionally and an antrotomy or radical operation is called for.

When facial paralysis occurs in the course of the disease the cavities of the middle ear must be totally opened (radical operation). When disease of the labyrinth capsule is diagnosed (cholesteatoma, granulations in the windows fistula) opening of the labyrinth is to be recommended even if the latter is still functioning.

When, in spite of removal by operation of middle ear suppuration and correspondingly long observation, a circumscribed disease of the labyrinth shows a tendency to increase (gradual loss of function, possibly accompanied by giddiness and headache, poor healing of the cavity) the labyrinth should be opened before the functions are wholly lost.

In a case of acute elimination of the eighth nerve (when it is probably impossible to decide whether the case corresponds to a serous or to a suppurating inflammation in the labyrinth), and it is necessary to operate for other reasons, the complete radical operation should be done on the middle ear even in acute cases in order that the lateral labyrinthine wall may be inspected.

In cases of abscess of the brain (especially with abscess of the cerebellum, and possibly with deep extradural abscess of the posterior fossa) the sacrifice of even an intact labyrinth may be necessary for exposure of the abscess. A. R. HOLLENDER, M.D.

**Lillie H. I. and Stark W. B. The Insidious Symptomless Destructive Effect of Cholesteatoma.** *Surg. Clin. N. Am.*, 1926, vi, 1359.

Two interesting cases illustrating the insidious, symptomless, destructive effect of cholesteatomatous masses in the temporal bone have been observed in the Mayo Clinic.

The first case was that of a woman 26 years of age who complained of severe pain in the left ear, vertigo, and vomiting of three days duration. Fifteen years previously she had had an attack of acute purulent otitis media on the left side. The tympanic membrane was thickened and bulging. The hearing was diminished, but the responses of the semicircular canals to stimulation were prompt. The roentgenogram showed a sclerotic mastoid.

Incision of the tympanic membrane was followed by immediate and complete relief of the pain and after the lapse of a few hours, by cessation of the vertigo. There was a foul smelling discharge. Diffuse labyrinthitis developed, but the acute symptoms subsided in a few days. At operation, it was found that the tympanic membrane and middle ear were filled with a cheesy cholesteatomatous mass. When this was removed, fistulae were discovered leading to the superior and horizontal semicircular canals. Labyrinthectomy was performed. Uneventful recovery resulted.

The interesting features of this case were the history of an old otitis media, all but forgotten by the patient, the intact tympanic membrane, the foul smelling discharge following myringotomy and the labyrinthine symptoms and findings.

The second case was that of a man aged 35 years. The only complaint was itching in the right ear. There was a small crust attached to the posterior inferior wall of the right external auditory canal just external to the isthmus. When this was removed a fistula was found leading into the mastoid. On being questioned, the patient recalled having had in childhood, an acute otitis media on the same side. The

tympanic membrane, the hearing and the responses of the semicircular canals to stimulation were normal. A roentgenogram revealed an extensive destructive lesion of the pars squamosa.

At operation, an unusually destructive process was found. The cholesteatomatous mass involved the squamous portion of the temporal bone to its limits and the petrous portion to the apex. It had dissected the capsule of the labyrinth distinctly outlining it. The dura near the apex of the petrous portion was very thin and the removal of the mass injured the dura, allowing the escape of cerebrospinal fluid, which continued to ooze for seventy-two hours. Convalescence was protracted, but no untoward symptoms developed.

These cases show how insidious and extensive may be the effects of cholesteatoma in the temporal bone in the absence of symptoms. In both cases there was a history of disease of the middle ear and the tympanic membrane was intact. It is highly probable that there had been a defect in the tympanic membrane but that this had healed, leaving in the middle ear a bud of epithelium.

## NOSE AND SINUSES

**Willcox, Sir W. Nasal Sinusitis as a Cause of Toxæmia.** *Proc. Roy. Soc. Med. Lond.* 1916, 10, Sect. Laryngol. 49.

Infection of the nasal sinuses is just as important in the causation of toxæmia as is dental sepsis. The diagnosis of acute nasal sinusitis is easily made. Chronic sinusitis is diagnosed on the basis of the history and the findings of expert examination of the nose including roentgenographic examination, transillumination, and rhinoscopic examination with puncture. From the author's experience with these cases he draws the following conclusions:

1. Nasal sinusitis is relatively common and should always be searched for in cases of toxæmia in which the cause is not apparent.

2. In cases of systemic disease which may be due to toxic conditions, a careful search should be made for sinusitis.

3. Nasal sinusitis is an important cause of toxæmia. It may be very far reaching in its effects and may cause any of the many diverse pathological conditions which are now recognized as being sometimes due to dental sepsis.

4. Nasal sinusitis, particularly in the chronic form, often requires operative treatment. Adequate treatment is imperative since the condition is a focus of infection which, if left untreated, will speedily give rise to systemic disease affecting other parts of the body.

5. In the treatment of nasal sinusitis it should always be remembered that the case is a case of toxæmia usually streptococcal in which the focus of infection is in the sinuses. Every case is therefore a problem in immunity.

In the discussion of this report it was brought out that only chronic cases should be operated upon,



that asthma is often caused by nasal sinusitis and that nasal sinusitis promotes a chronic toxic state by causing bronchiectasis. There was some disagreement as to the relative value of the X-ray and transillumination in the diagnosis but it was generally agreed that neither is absolutely decisive.

MANFORD R. WALTZ, M.D.

McMahon, B. J. The Pathology of Sphenoidal Sinusitis. *Arch. Otolaryngol.* 1926; 14: 310.

The author reviews seventy cases of sphenoidal sinusitis from the pathologist's point of view in order to determine whether or not there is any relation between the symptoms and the microscopic changes and between the microscopic changes and the end results of operation on these sinuses. In every case the turbinate and cell walls removed at operation were fixed, embedded, sectioned, stained and studied. From these studies the following conclusions are drawn:

1. In chronic hyperplastic sphenoidal sinusitis the microscopic examination shows thickening, sloughing, polypoid degeneration and metaplasia of the epithelium, thickening of the basement membrane, edema, round cell infiltration, dilatation or compression of the gland, and thickening of the blood vessel walls in the tunica propria, thickening of the perosteum and osteoblastic activity, osteoclastic activity, fibrosis, hyperostosis, osteomalacia and necrosis in the bones.

2. The symptoms which may be associated with these microscopic changes include headache, an antero-nasal discharge, a postero-nasal discharge, asthma, arthritis, failure of vision, impairment of hearing and herpes of the second division of the fifth nerve.

3. There is no direct interrelation between the microscopic findings, the symptoms and the results of operation.

4. The incidence of sphenoidal sinusitis is much greater among women than among men.

5. The percentage of good results is much higher among women than among men.

6. Chronic hyperplastic sphenoidal sinusitis is a distinct clinical entity in which the operative results are attended with improvement or complete recovery in a high percentage (74.3 per cent) of the cases.

MANFORD R. WALTZ, M.D.

## MOUTH

Brown, G. V. I. The Surgical Treatment of Cleft Palate. *J. Am. M. Ass.* 1926; 137: 1379.

Thompson, J. E. A Septal Flap in the Closure of Unilateral Clefts of the Palate. *J. Am. M. Ass.* 1926; 137: 1384.

In the operation described by Brown the velum and the posterior part of the hard palate are closed by a bone flap, and in the second step the anterior part of the palate fissure is corrected by any of the recognized methods in which a mucoperiosteal flap

is used, such as the von Langenbeck procedure. Brown employs a bone flap when the palate fissure is complete and the bone is involved. In the cases of edentulous infants incisions are made on both sides of the palate in an anteroposterior direction along the line of, and just inside the alveolar ridge. When the teeth have erupted, they are made at just a sufficient distance from the linguogingival border to prevent injury to the tooth roots. A chisel is forced directly through the external hard surface of the fragmentary palate bone structures into the cancellous structures and then inclined toward the palatal fissure border.

Pressure inward and slightly upward causes the necessary fracture and permits both sides of the palate fissure border to be brought into immediate contact at a point between and slightly anterior to what in a normal case would be the outline of the posterior border of the palate bones and also throughout the extent of the soft parts. The medial edges of each incision are sutured with pyoktanin catgut and pulled toward the midline. Gauze packs are inserted into the operative wounds for five days. To prevent blocking of the nasal passages by the packs, one or more nasal catheters are introduced.

Because of the unrestricted blood supply this method is associated with less danger of loss of tissue with a consequently imperfect result than other procedures. It gives a full length unstiffened velum and a posterior border of the palatal bones which favors the natural function of the attached muscles. The palate closure is completed from one and a half to two years before speech habits are fixed, no serious injury is done to the alveolar outline, the uninjured supporting bone framework tends to improve the outline of the lip and the activity of both the posterior palatal and the pharyngeal muscles co-operating with the labial and facial muscles assists in progressive development toward more symmetrical facial and labial outlines, all factors of importance in the acquirement of good speech.

Thompson states that unilateral clefts of the palate should be operated upon early. The object of his operation is the restoration of the curve of the alveolar border and closure of the anterior part of the palate by means of a flap taken from the side of the septum. It results in union of the anterior ends of the alveolar processes and of a third or half of the front of the palate.

The septal flap is prepared first and the palatal flap next. An incision on the side of the septum is made horizontally from front to back along the ridge that separates the vertical and horizontal parts of the septum from each other. Its anterior end stops at the point in the groove which separates the alveolar ridge of the premaxilla from its palatal surface. Posteriorly the incision ends at the posterior border of the septum. The base of the flap is formed by the juncture of the septum and the mucoperiosteal layer of the hard palate.

This flap of mucous membrane is peeled from the septum with a periosteal elevator and retracted

toward the base. Behind where the velum and hard palate blend, it is difficult to raise the flap because of the palatal aponeurosis, but after careful snipping away of the tissues the whole palate with the flap hangs free on its lateral and posterior attachments.

The palatal flap of mucoperiosteum is prepared somewhat similarly.

These flaps are now ready for approximation, but further preliminary steps are necessary before they can be sutured. The maxillæ, which are far apart, must be gently molded toward the midline and their tips denuded of mucous membrane. A silver wire suture is then passed through the maxillary processes to hold them together. The bones are penetrated at a considerable distance above the alveolar margins to avoid injury to the tooth sacs. The mattress sutures of the flaps are tied and the maxillæ pushed firmly together. The silver wire is then tightened.

Feedings are given immediately after the operation. The wire is removed after three or four weeks and the sutures of the flaps are removed after four or five weeks if they do not come away spontaneously.

GEORGE R. McCLIFF, M.D.

**Fig. F A Actinomycosis of the Tongue. Report of Twelve Cases. *Surg. Clin. N. Am.* 1926 vi 1343**

Primary actinomycosis of the tongue, while common in cattle and hogs, is rare in man. Only thirty-seven cases having been previously reported. It has been observed most frequently in adult males engaged in agricultural pursuits.

In a typical case there is first noted a hard, painless, deeply situated nodule which in a few days comes to the surface, becomes tender and painful, softens and ruptures. This process is repeated until the entire tongue and the floor of the mouth become indurated and thickened.

If the lesion is incised just prior to its rupture, sulphur bodies and actinomycetes can usually be demonstrated in the pus. If a nodule is excised prior to softening, serial sections may be necessary to demonstrate actinomycetes in the tissues. There is nothing else diagnostic in the microscopic picture.

The treatment consists in wide excision of early nodules and free drainage of those that have softened together with radium irradiation of the glands and increasing doses of a saturated solution of potassium iodide up to 100 drops three times daily.

Eleven of the twelve patients whose cases are reported are well. The remaining one could not be traced but should be well since the early nodule was widely excised.

### PHARYNX

**New G. B. and Decker W. J. Pharyngeal Sinus with Cervical Pott's Disease. Report of Six Cases. *Surg. Clin. N. Am.* 1926 vi 1335**

Six patients with cervical Pott's disease have been examined at the Mayo Clinic during the last fifteen

years. During the same period, twenty-four patients with tuberculosis of the cervical spine without pharyngeal abscess were examined.

There are four types of retropharyngeal abscess: (1) the acute, occurring laterally in the pharynx secondary to a nasopharyngeal or pharyngeal infection, (2) that affecting children, which is due to a pyogenic infection and usually associated with a similar infection in the cervical glands, (3) the tuberculous type, which is associated with tuberculosis of the cervical glands and is a breaking down of a tuberculous pharyngeal gland, and (4) the type secondary to tuberculosis of the cervical spine. The tuberculous abscess may involve the upper or lower cervical vertebrae. The symptoms vary with its situation.

Pharyngeal abscess associated with tuberculosis of the cervical spine occurred only in males. Four of the patients were young. One patient was a man aged 66 years and another a man aged 71 years. The symptoms extended over periods varying from six months to twenty-eight months.

Retropharyngeal abscess not associated with cervical Pott's disease occurs most commonly in young children. Of seventeen cases of retropharyngeal abscess examined which were not of tuberculous origin, eleven occurred in children less than 5 years of age. Of the thirty patients with cervical Pott's disease, twenty-two were adults, six of whom had pharyngeal sinuses and eight were children without pharyngeal sinuses.

The part of the cervical spine involved was the first and second vertebrae in two cases, the second and third vertebrae in one case, the third and fourth vertebrae in one case, the fourth vertebra in one case, and the seventh vertebra in one case. In one case at the Mayo Clinic the seventh cervical vertebra was involved and the abscess ruptured into the oesophagus, causing an oesophageal as well as a cervical fistula.

### NECK

**Hudson R. V. The So Called Branchiogenetic Carcinoma. Its Occupational Incidence and Origin. *Brit. J. Surg.* 1926 xiv 280**

Among cases of malignant disease there occasionally occur cases with a tumor of the neck in which on careful examination no discoverable focus of disease can be found. The tumor has the microscopic characters of a squamous carcinoma. In such cases the diagnosis rests between a primary carcinoma of branchiogenetic origin and a carcinoma secondary to a healed or undiscovered focus elsewhere in the body.

Hudson states that the prevalent opinion with regard to these apparently primary tumors of the neck may be briefly summarized as follows:

1. A solid malignant tumor of the neck, showing the structure of a squamous celled carcinoma, is most probably secondary to a healed or undiscovered focus somewhere in the immediate vicinity.

2 A tumor originating in a vestigial remnant is rare but occurs in two main types (a) the branchio-genetic carcinoma (b) the so called endothelioma

Ewing emphasizes the fact that branchio-genetic carcinoma is commonly cystic but admits the possibility of a solid squamous cell carcinoma of branchio-genetic origin

The author reports in detail the histories of six cases of carcinomatous cervical tumor of obscure origin which occurred in miners or grooms

Each of these tumors began as a small painless swelling just below and behind the angle of the mandible. The gradual increase in size of the swelling eventually compelled the patient to seek treatment for pain referred to the temporal region and the back of the neck. On examination the only positive clinical sign was the presence of an ovoid tumor regular in outline and firmly fixed to the skin and deep structures. The center of the growth lay just below and behind the angle of the jaw. In spite of rhinolaryngoscopy no primary focus could be discovered. Microscopy revealed that the tumors were squamous in origin.

In all of these cases the cervical tumor arose at the site of the jugulodigastric gland. This gland is large, oval and flattened and about 2.5 cm in length. It is situated upon the medial aspect of the great vein, a site which may be called the critical point of the neck, since here within the space of 2 or 3 cm. arises the vascular supply to the structures derived from the first five arches and to this point converge not only the greater part of their venous drainage but also the lymphatic drainage.

The upper third of the sternomastoid laterally and the ascending ramus of the mandible medially tend to limit the spread of these tumors and favor the ovoid form which they maintain until a late stage in their development.

In only one case was an autopsy possible. In this instance the primary focus was in the pyriform fossa.

The fact that all of the tumors described occurred in miners or men who had worked with horses all their lives suggests that in occupations in which a certain anatomical tract is frequently subjected to trauma, such a site must be regarded as a possible portal of entry for a common causal agent.

With regard to treatment it may be stated that in the great majority of recorded cases surgical removal was disappointing. Recurrence was generally rapid and fatal. The poor results are attributed by the author to the difficulty of early diagnosis due to the site of the tumor and the presence of a primary focus acting as a neoplastic cell depot.

In the cases reviewed operation was not considered. The patients were all hopelessly inoperable at the time they were first seen. The method chosen was radium irradiation. One of the patients is still alive and well and in another the original tumor-bearing area was apparently free from growth at the time of death.

The diagnosis of these tumors rests principally upon their anatomical site and their consistency.

The solid tumors that may occur at the same site are the primary endotheliomata of lymph glands of the single type and endotheliomata of branchio-genetic origin. Microscopic sections only will prove the diagnosis. The solid tumors occurring near the site in addition to the tumors mentioned are the endotheliomata and especially carcinomata beginning in the lower pole of the parotid gland but these growths are always at a higher level and more superficial and spread in the parotid substance and cheek as well as the post ramal recess. Tumors of the carotid body are situated at a lower level and tend to be globular and early irregular in outline. Their histological picture is definite.

An early diagnosis will always be difficult but the presence of a unilateral painless tumor at the site of the jugulodigastric gland in an elderly man should be regarded with suspicion.

JACOB S GROVE M.D.

Menne F B, Joyce T M and von Hungen A P. Thyroid Disturbances. A Clinicopathological Study of 300 Instances. *Arch Surg* 1926 xiii 379.

The authors suggest the following classification of thyroid conditions according to their gross characteristics and the silent microscopic findings.

#### PATHOLOGICAL CLASSIFICATION OF THE NORMAL OR ENLARGED GLAND WITH OR WITHOUT INCREASED OR DECREASED ACTIVITY

##### 1. Diffuse parenchymatous hyperplasia

A Gross examination compact ischemic grayish white and colloid free

B Microscopic examination (a) hyperplasia and hypertrophy of epithelium (b) peripheral general vacuolization of colloid (c) dilatation of lymph channels and engorgement of blood vessels (d) variable increase in the supporting stroma with or without round cell infiltration

##### 2. Diffuse adenomatous hyperplasia

A Gross examination diffuse reddish brown gland without noticeable nodularity or accentuation of lobular markings variable amount of colloid

B Microscopic examination (a) focal changes similar to those in Group 1 (b) normal or colloid stretched alveoli (c) focal hyperplasia and hypertrophy of epithelium (d) interalveolar hillocks or intra alveolar papillomatous projections (e) focal round cell collections of pseudo lymph nodes (f) focal increased vascularity and dilated lymph channels

##### 3. Nodular adenomatous hyperplasia

A Gross examination variable nodular accentuation of the lobular markings with or without excessive colloid storage cystic degeneration hemorrhage scarring or lime salt deposit. The color usually varies with the regressive changes

B Microscopic examination (a) focal cytological changes similar to those of Groups 1 and 2

compensatory, (b) characteristic retrogressive changes (c) areas of adenomatosis

#### 4 Solitary adenoma

A Gross examination variable in size circumscribed solitary or multiple grayish white to dark reddish brown solid, cystic or colloid filled regressive changes may be present

B Microscopic examination (a) all stages of fetal types of alveoli (b) peripheral pseudocapsule formation with round cell infiltration and compressed alveoli (c) focal neighboring areas in adjoining parenchyma (d) neighboring areas of adenomatosis

#### 5 Neoplasms

6 Inflammation (a) pyogenic (b) infectious granuloma

Of the 300 cases of thyroid disturbances reviewed thirty eight (12.6 per cent) belonged to Group 1 diffuse parenchymatous hyperplasia 108 (35 per cent) to Group 2, diffuse adenomatous hyperplasia 102 to Group 3 nodular adenomatous hyperplasia forty-one to Group 4, solitary adenoma with hyperplasia seven to Group 5 neoplasm, and four to Group 6 inflammatory processes

The following conclusions are drawn

1 A simple clinicopathological study is desirable in all thyroid diseases

2 The incidence of so called exophthalmic goiter (diffuse parenchymatous hyperplasia) in relation to other types is of importance

3 Pregnancy is a factor precipitating thyroid unbalance

4 The pulse pressure in thyroid disturbances is usually high it is highest in the parenchymatous hyperplasia group It is out of proportion to the ordinary changes in the blood vessels occurring in early and middle life

5 The basal metabolic rate is a valuable indicator of thyroid unbalance and should be determined after operative procedures as well as before

6 More experimentation is desirable to determine the significance of adenomatosis, solitary adenoma and other pathological changes as well as the clinical effect of the amount of the gland removed

JOHN J. MALONEY M.D.

Keith W D Goiter from the Standpoint of Prevention *Canadian M Ass J* 1926 xvi 1175

Gordon A H Goiter Its Medical Aspect *Canadian M Ass J* 1926 xvi 1176

McGuffin W H Goiter From a Radiologist's Viewpoint *Canadian M Ass J* 1926 xvi 118

Fahrni G S Goiter Its Surgical Treatment *Canadian M Ass J* 1926 xvi 1183

KEITH reports that in Indian villages on the coast the inhabitants of which subsist to a large extent on salmon, salmon eggs and seaweed goiter is practically unknown An Alberta survey however demonstrated that Indians are as subject to goiter as any other race Further investigation proved that the incidence of goiter was increased where the drinking water was of a turbid or murky character These

waters are not iodine free, but may contain iodine in an unassimilable form or some other organic or inorganic matter which has a definite influence upon the growth of the goiter

For the prevention of goiter, Keith recommends the use of such food as salmon and other sea foods rich in iodine The drug should be given in a goiter district for both prevention and cure, but its general use in the cases of school children should be carefully regulated in order that it may not cause toxic symptoms

GORDON describes simple adenoma and cystic adenoma and points out that in the latter pressure on the trachea may cause symptoms of a confusing nature and even death from asphyxia Acute thyroiditis may occur in the course of any of the infectious diseases and in certain cases of acute reactions due to infected tonsils

Toxic goiter must be differentiated from simple goiter and from non goitrous conditions Tachycardia, tremor and loss of weight are of much importance In order properly to evaluate the basal metabolism it must be remembered that the rate may be increased by many factors Constant readings of + 10 or over may be considered as positive Hyperthyroidism may be due to toxic adenoma to diffuse hyperthyroidism or exophthalmic goiter The first type appears in persons of middle age in whom a thyroid tumor has existed for a number of years The usual evidence is present but there is no exophthalmos

Iodine hyperthyroidism may occur from self therapy or improper medication in cases of simple goiter In exophthalmic goiter there is probably some other toxic element at work in addition to thyroxin as this condition cannot be produced by the administration of thyroxin or iodine Myocardial damage in the chronic case may be due to the effect of toxins as well as to overactivity In the treatment iodine in proper doses is of value, even though its effects are temporary Surgery offers the best hope of complete relief

McGUFFIN classifies goiter as

1 Physiological goiter due to iodine deficiency

2 Pathological goiter without hyperthyroidism This includes diffuse colloid parenchymatous, adenomatous and cystic goiter

3 Pathological goiter with hyperthyroidism including toxic adenomata and exophthalmic goiter

With the exception of the last these types are progressive from one to the other in the order given Exophthalmic goiter shows hyperplasia of the epithelial elements lining the acini In the treatment, mental and physical rest are important Radium is preferred for the more serious cases because it is portable The dosage is determined by the degree of toxicity and the basal metabolic rate One hundred milligram hours are given over five areas for each 10 per cent increase in the basal metabolic rate Treatments are repeated on each of five successive days and over each side of the neck every week for four weeks The improvement is gradual

The pulse rate falls the nervousness ceases the metabolic rate is diminished, and the patient begins to gain weight

The author cites the advantages of X ray and radium therapy and answers the objections advanced by the surgeon. He denies that the X ray injures the parathyroid glands or produces adhesions about the gland. Most of the cases which do not respond to X ray or radium irradiation have not been given sufficient treatment. Because of the number of surgical failures and the degree of operative risk, the author prefers X ray or radium treatment to surgery.

LAHRNI states that although hyperthyroidism constitutes the large majority of surgical goiters other forms such as large colloid cystic and nodular goiters causing pressure demand surgery. Adenomata have a tendency to become toxic in later years. These cases coming to operation late in toxicity constitute some of the most difficult cases. Many cases of colloid and adenomatous goiter are associated with a lack of energy, extreme fatigue and mental irritability. These have been described as cases of dysthyroidism and are readily cured by removal of the gland.

The author reviews a series of 320 thyroidectomies. The condition for which the operation was done was exophthalmic goiter or primary hyperthyroidism in 55.93 per cent, toxic adenoma in 30 per cent, large adenomata in 6.25 per cent, large colloid nodular goiter in 3.75 per cent, cystic goiter (usually large and often associated with adenoma) in 3.75 per cent, and carcinoma in 0.31 per cent. Eight operations were done for recurrence following thyroidectomy performed from one to twelve years previously.

WILLIAM J. PICKETT, M.D.

Mayhew J. M. The Basal Metabolism and the Blood Chemistry. *Nebraska State M. J.* 1926 xi 409.

Emerson C. The Pathology of Goiter. *Nebraska State M. J.* 1926 xi 411.

Bliss R. W. The Medical Management of Goiter. *Nebraska State M. J.* 1926 xi 416.

Rowe E. W. The X Ray Treatment of Goiter. *Nebraska State M. J.* 1926 xi 419.

MAYHEW cautions against relying entirely upon the basal metabolic rate in the diagnosis and treatment of thyroid conditions. He believes that the following three tests should be made:

1. The basal metabolism test plus clinical observation. In the absence of fever, acromegaly, leukæmia and severe anemia, an increased basal metabolic rate is strongly suggestive of hyperthyroidism.

2. The glucose tolerance test. In toxic thyroid conditions the return of the blood sugar to the normal is delayed from one to two hours.

3. The serological test evolved by Kottman which is based on colloid chemistry. The technique of this test is described.

EMERSON states that the cause of dysfunction and associated anatomical changes in the thyroid gland

is generally conceded to be an excitation due to a deficiency of iodine. Under this excitation hyperthyrophy and then hyperplasia result. If the excitation is severe exophthalmic goiter is produced. Extreme excitation induces atrophy and fibrosis with resulting myxædema. Long continued mild excitation gives rise to simple or toxic adenoma. If the excitation ceases the histological picture returns toward the normal but evidence of the previous changes persists. This is the simple non-toxic colloid goiter.

Marine and J. Enhardt have proved that a deficiency of iodine induces over activity of the thyroid but many clinical observations have demonstrated that the injudicious administration of iodine has stimulated over activity.

The author presents a pathological classification of goiter according to the etiology.

Bliss discusses the medical management of goiter and draws the following conclusions:

Adolescent colloid goiter is prevented or greatly benefited by the administration of iodine but the treatment of a community *en masse* with iodine is dangerous.

Colloid goiters in adults are benefited by iodine but the patient requires careful supervision.

Benign adenomata are harmed by iodine and should be removed before they become toxic.

Exophthalmic goiter requires both medical and surgical treatment.

Digitalis is indicated only in auricular fibrillation or cardiac failure.

As infection may play a rôle in goiter the eradication of all known foci is indicated.

Rowe states that clinical observations and records of the basal metabolism rate indicate that properly selected cases of goiter are as rationally treated with the roentgen ray as by surgery.

The general management of the patient is as important in roentgen ray treatment as in other modes of therapy.

Cases of adenoma with toxicity yield more readily to surgery but often show excellent results from roentgen ray treatment.

Exophthalmic goiter shows the best results of all types.

In roentgen ray treatment there is no mortality, no fear of the treatment and no scar.

The treatment of toxic goiter is major roentgen therapy and demands skill.

The frequent check of the metabolism is an aid in diagnosis and treatment.

J. FRANK DOUGHTY, M.D.

Hotz G. The Operative Treatment of Basedow's Disease (Zur operativen Behandlung des Basedow). *Deutsche med. Wchschr.* 1926 lii 604.

The more goitrous tissue that can be removed in Basedow's disease the more favorable is the result. However, extensive reduction is usually very dangerous. An important advance in the treatment of the condition is the prior determination of the basal

rate of oxygen exchange. In Basedow's disease this is very greatly increased. On the basis of the findings of this test the author has often operated in from two to four stages, first ligating the vessels and later resecting one or both halves of the thyroid gland. In this way the dangers may be materially lessened. Often the result is good after simple ligation of the vessels.

After a time, often after years, the complaints return following the establishment of the collateral blood circulation and further resection must be performed. The disadvantage of this method of treatment consists in its long duration and the difficulties attendant upon the second operation.

A further advance in the surgical treatment of Basedow's disease was brought about by the use of gynergen. This preparation is supposed to have an effect antagonistic to that of thyroxin. The pulse rate can be easily lowered by it. Permanent improvement of the symptoms following the use of gynergen alone was not observed.

The favorable effect of large doses of iodine on the acute phase of Basedow's disease is a very interesting and unexpected advance in the operative therapy. Following large doses of iodine (from 10 to 30 drops of Lugol's solution daily) the basal metabolism is reduced by 25 per cent. However this improvement is not permanent. The optimum effect is obtained in eight days. The basal metabolic rate then rises again. The iodine should therefore be given several days before the operation and particularly during the first days of the postoperative treatment. After eight days it should be discontinued.

BRAUN (Z)

**Korenchevsky, V.** The Influence of the Removal of the Thyroid, Parathyroid and Sexual Glands and of Thyroid Feeding upon the Regulation of the Body Temperature of Rabbits. *J. Path. & Bacteriol.* 1926 **XXI**: 461.

The cooling of normal young rabbits produces a more pronounced fall in the body temperature than the cooling of normal adult rabbits. After thyroid

ectomy, cooling causes a much more pronounced decrease and warming causes a much less pronounced increase in the body temperature than is observed in the normal animal before removal of the thyroid. Some adult thyroidectomized rabbits may die after a degree of cooling which normal rabbits are able to resist. The cooling of young thyroidectomized rabbits is lethal under conditions which, in the same rabbits before the operation, produced only a temporary fall of body temperature.

Parathyroidectomy does not change in a marked degree the response of normal or thyroidectomized rabbits to cooling or warming. In eleven experiments the influence of castration on the response seemed to be similar to that of thyroidectomy, but the changes produced were much less marked. The cooling of two rabbits in which both the sexual glands and the thyroid gland had been removed was followed by a lethal fall of the body temperature, a fact suggesting an influence of the sexual glands on the regulation of body temperature similar to that of the thyroid gland. Rabbits in which the thyroid, parathyroid and sexual glands were removed simultaneously responded to cooling or warming in the same way as thyroidectomized animals.

The response of thyroidectomized rabbits to cooling or warming may be restored to normal by thyroid feeding. After long and excessive thyroid feeding, warming may even be followed by a lethal overheating with a rise in the body temperature to 43.5 degrees C. This effect of thyroid feeding upon thyroidectomized rabbits is produced only after about a week of thyroid feeding and does not disappear until several weeks after the cessation of the thyroid feeding. The resistance to cooling disappears before the resistance to warming.

In conclusion the author states that as the thyroid gland plays an important part in the regulation of the body temperature, its condition must always be taken into account in considering the resistance of different individuals to cold or heat and cases of disease accompanied by fever.

STANLEY J. SEEGER, M.D.

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS, CRANIAL NERVES

**Demel** Living Dogs Whose Skulls Have Been Subjected to Roentgen Irradiation (Lebende Hunde deren Hirnschädel mit Röntgenstrahlen bestrahlt wurden) *Zentralbl f Chir* 1926 lvi 2155

Having demonstrated during the past year dogs which following repeated irradiation of the skull showed disturbances of growth an ataxic gait and atrophy of the eye grounds the author describes in this article the histological findings in the brain and eye grounds of these dogs

The irradiated brain showed a general decrease in size and atrophy of the right half the side to which the irradiation was directed The phylogenetically older portions of the brain withstood the irradiation better than the younger parts

Histological examination showed a reduction in the pyramidal area and of the corpus restiforme in the medulla oblongata and a reduction in the numbers of fibers in other regions The cortex showed a disturbance of layer formation the disappearance of cells and a vacuolizing degenerative affection of the ganglion cells There were no inflammatory or reactive processes in the blood vessels Marked changes were found in the retina which had in places almost disappeared The choroid and optic nerve were apparently normal

The histological findings explained the changes previously noted in the living animals

JANSSEN (Z)

**Sargent P** Types of Cerebral Tumors *Brit M J* 1926 ii 628

**Souttar H S** A New Form of Craniotome for Opening the Skull *Brit M J* 1926 ii 630

**Bertwistle A P** Localization by the X Rays *Brit M J* 1926 ii 631

In his discussion of the types of cerebral tumors SARGENT calls attention to the pertinency even today of the remark made by Horsley twenty years ago with regard to so called expectant treatment of intracranial tumors Horsley said Considering that, in the absence of any active surgical treatment the only thing to be expected is death the term expectant treatment has always to my mind carried with it its own condemnation for inhumanity

Sargent brings out the fact that advances in surgical technique have robbed intracranial surgery of some of its terrors and that in cases of cerebral tumors surgery offers the only hope of either a cure or alleviation of the symptoms Tumors can now be more definitely localized and even their nature can be predicted to some extent before the operation is performed

Gliomata have a progressive and infiltrating growth but never metastasize or spread beyond the brain If pituitary and cerebellopontine tumors are excepted they constitute nearly 80 per cent of intracranial growths They may be almost completely cystic and so degenerated that little if any recognizable tumor tissue is left or firm solid and circumscribed but not encapsulated For the more common rapidly growing and infiltrating type only palliative measures are possible

In some cases Sargent has employed from 50 to 100 mgm of radium for twenty four hours About 25 per cent of patients with cerebral gliomata die shortly after operation and about 50 per cent die within eight months after surgical treatment About 25 per cent make good recoveries surviving for several years and being able during that time to earn their own living

In cases of cerebellar gliomata the results are better The operative mortality is less than half that of cerebral gliomata Twenty eight per cent of the patients are alive and well on an average of three years after the operation and the average survival of the remainder is thirteen months Sargent cites the cases of three patients who are clinically cured

Endotheliomata are benign slowly growing encapsulated tumors arising from the cells of the arachnoid tufts They do not actually invade the brain but form depressions in it Complete removal requires the removal of the dura overlying the tumor and this is sometimes fraught with danger and difficulty on account of the presence or proximity of the large venous sinuses Endotheliomata are relatively rare Of seventy five cases in which they were completely removed a good recovery resulted in 50 per cent Patients who recover may be divided into two groups those restored to their normal lives and occupations with no neurological defect (2 per cent) and those with a neurological defect such as palsy convulsions etc (38 per cent) The operative mortality is high

The majority (90 per cent) of cerebellopontine tumors are neurofibromata As a rule these growths are firm solid and encapsulated but they may be soft and even cystic For years the only complaints may be deafness and head noises Bárány tests are positive in the early stages Often the corneal reflex is lost or diminished In all cases of nerve deafness the corneal reflex should be determined and the Bárány test carried out A cerebellopontine tumor eventually compresses the aqueduct When ventricular distention occurs with the classical signs of increased intracranial pressure operation becomes more dangerous and difficult and the outlook is grave On account of the proximity of the tumor to the medulla and its blood vessels its excision is

*masse* is hazardous. It should be removed by intra capsular enucleation in fragments and by suction.

Pituitary tumors are divided into two groups (1) pituitary tumors proper most of which are adenomata arising in the sella turcica and invading the cranial cavity, and (2) suprapituitary tumors, arising above or in close relation to the sella. Judged from the point of view of visual improvement—and in most cases there are visual disturbances—the gain from operation greatly outweighs the operative risk. It is certain that as these cases come to operation earlier and before the visual pathways have been severely damaged better results will be obtained. Decompression will render the patient more comfortable as it affords relief from headache and often results in improvement in the mentality.

In conclusion Sargent says that the outlook for further improvement in cases of intracranial tumors depends to some extent on the further improvement of surgical technique but even more upon earlier diagnosis and accurate localization. The onset of the classical signs—headache, vomiting and papilloedema—indicates the beginning of the terminal stage of the condition. It is of vital importance that surgical intervention take place before this stage is reached. A careful neurological examination should be made in every case of disturbance of cerebral function especially when it is persistent or progressive. In many cases there will be a history of some slight disorder which has been present for months or years.

SOUTTAR describes a new form of craniotome for opening the skull with the use of which his average time for turning down a large bone flap is between two and two and a half minutes. The appliance consists of a stud to be fixed in a trephine opening in the center of the bone flap, which carries an arm or lever that can be swung around in a circle and upon which the cutting instrument can be fixed at any desired distance from the center. This instrument cuts through the bone very rapidly and with little exertion on the part of the operator. It carries a guard to prevent injury of the dura. Souttar uses also a specially devised brace and bit for trephining.

BERTWISTLE describes a method of localization of various parts of the brain by means of the X ray. In this procedure he uses an apparatus made of watch spring steel which consists essentially of a base line extending from the glabella to the external occipital protuberance upon which are erected at right angles at accurately designated distances a number of upright members. This apparatus is placed upon the head a lateral roentgenogram is made and by means of measurements and calculations the various gyri can be localized and projected upon the skull cap. In this manner an exploration can be made exactly over any desired area. For measuring these distances Bertwistle uses an inexpensive celluloid instrument which he calls a 'gymeter'. The method is of value particularly in cases of depressed fracture, but is helpful also in cases of brain tumors. GILBERT C. ANDERSON, M.D.

Heymann, E. Clinical Experiences with the Development and Removability of Tumors at the Cerebellopontine Angle on the Basis of Twenty Two Observations (*Klinische Erfahrungen ueber die Entwicklung und Entfernbarkeit der Kleinhirn Brueckenwinkelgeschwuelte auf Grund von 22 Beobachtungen*) *Beitr z klin Chir* 1926 cxxxvi 38.

The author designates tumors at the cerebellopontine angle as tumors of the acoustic nerve. He discusses the diagnosis and prognosis of these tumors on the basis of twenty two cases. The unilateral acusticus disturbance and the simultaneous failure of the reflexes of the cornea are absolutely definite focal symptoms. In addition there may also be signs in the adjacent areas. Choked disk and headache in the opposite frontal region are common. The neurological and the otological findings render other methods of diagnosis unnecessary.

The operative procedure is described in detail. Of the author's patients 43.7 per cent remained alive for some time after the operation. When blindness has once developed operation is useless.

KOCH (Z)

Eagleton W. P. Otitic Meningitis. *J Am M Ass*, 1926 lxxvii 1244.

From the standpoint of operation, cases of suppurative meningitis at an early stage may be divided according to the region of protective reaction as follows:

#### 1. Posterior fossa cases

A. Labyrinth cases (a) from infection through the internal auditory meatus (b) from infection by way of the ductus endolymphaticus (c) from caries of the posterior semicircular canal.

B. Cases from caries of the petrous pyramid with out labyrinthitis—Trautman's triangle etc.

C. Cases secondary to thrombophlebitis of the lateral sinus.

#### 2. Middle fossa cases

A. Secondary to caries of the tegmen apical cells, superior semicircular canal.

B. From thrombophlebitis of the small vein.

C. Associated with osteomyelitis of the squamous

In any of these the operative discovery of the causative pathological lesion will determine the area of the cerebrospinal fluid system to be drained.

In septic meningitis, operation should be done while the inflammation is limited to an area adjacent to the primary focus of infection or an adjoining basal cisterna. It is during the period of apparent quiescence, when there are slight signs of meningeal involvement that surgery offers a fair prospect of recovery.

There is no doubt that the body frequently succeeds in spontaneously overcoming the infection in many cases especially if the increased intracranial pressure is relieved by repeated lumbar punctures. In two of the author's cases in which death occurred



# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Swan R H J and Fry H J B Tuberculosis of the Male Breast *Brit J Surg* 1926 xiv 234

Tuberculosis of the male breast must be accounted a pathological curiosity. Not more than twelve cases have been recorded in the literature since the condition was first described nearly a century ago. In spite of the widespread prevalence of tuberculosis in its various forms, tuberculous infection of the breast even in the female is a rare condition.

The authors report the case of a man 42 years of age who complained of a swelling in the left breast which he had noticed for three months. During the last month there had been some retraction of the nipple. Twenty-four years previously the patient was operated upon for tuberculosis of the right hip joint which was ankylosed.

Examination of the breast revealed a rounded, hard, somewhat nodular swelling about 2 in in diameter which was fixed to the subjacent pectoral muscle. The nipple was slightly retracted. The skin of the areola and of the part immediately surrounding it was thickened and adherent to the mass but there was no redness or oedema. Several small glands were palpable in the left axilla. A diagnosis of carcinoma of the breast was made. Radical removal of the breast was followed by complete recovery.

The specimen showed an abscess cavity immediately beneath the nipple in the fatty areolar tissue between the pectoralis major and the skin. On examination of the pus from the abscess a considerable number of tubercle bacilli were found.

Following the operation the patient was examined for other evidences of tuberculosis. Small hard nodules were found in the epididymis on both sides and one was discovered in the upper part of the right lobe of the prostate. In the absence of a history of venereal disease these were looked upon as old foci of tuberculous infection.

Tuberculosis of the breast is of two types, primary and secondary. The infection is considered to be primary when it occurs either directly through the skin of the breast or through the ducts of the nipple or is conveyed to the breast through the blood stream from a remote portal of entry. The type which is secondary to foci elsewhere is the commonest.

Various pathological types of tuberculous disease of the breast are described, namely (1) acute miliary tuberculous mastitis (2) the nodular type (3) the sclerosing type and (4) mastitis obliterans. Only the nodular type appears to occur in the male.

The condition can be recognized with certainty by the finding of tubercle bacilli in the tissues or in the pus of the abscesses by their cultivation from the pus or by animal inoculation in suspected cases.

The course of the disease is rapid in the male—not more than from three to six months—and shorter than in the female. This is evidently due to the fact that a small lump is recognized more easily in the rudimentary male breast and treatment is instituted earlier. In at least half of the cases the initial sign was a lump in the breast. Pain was present in only two cases. The site is usually the region of the nipple.

The condition must be differentiated from ordinary pyogenic mastitis and abscess, granulomata (actinomycosis, syphilis), simple and malignant tumors and fat necrosis.

The prognosis appears to be uniformly good. Radical excision of the breast with the removal of all tissues involved and with or without clearing of the axilla seems to be the method of choice. Incision and drainage has also proved effective.

JACOB S GROVE M D

## TRACHEA LUNGS AND PLEURA

Desjardins A U The Reaction of the Pleura and Lungs to Roentgen Rays *Am J Roentgenol* 1926 xvi 444

Inflammatory reaction of the pleura and lungs to irradiation may occur in any case in which a sufficient dose of radium or roentgen rays has been directed to these structures. The symptoms of pleuropneumonitis may appear from two to four weeks after a course of roentgen ray treatments. The chief symptoms are a cough, shortness of breath and sometimes fever. In from one to three weeks their acute phase subsides as the remaining lung tissue adapts itself to the new functional requirements and as the more or less injured pulmonary parenchyma recovers its normal activity. The physical signs of pleuropneumonitis vary considerably depending upon the degree, extent and situation of the pleural or pulmonary tissue injuries. Râles and a pleural rub or pleural effusion may occur. Such physical signs diminish to a large extent but evidence of chronic pleuropneumonitis persists in the form of adhesive bands or more or less extensive adhesion of the pleural layers. If sufficient pulmonary tissue has been involved a varying degree of functional impairment results leading to compensatory emphysema of the remaining pulmonary parenchyma.

During the early phases the roentgenological signs may consist merely in the diffuse fog of inflammatory pleural thickening with or without the still denser shadow of effusion or they may simulate

fairly closely those of the focal type of pneumonia so commonly seen after influenza. Since the site of such infiltration must necessarily depend upon the conditions of the roentgen ray treatment, the possibility that the roentgen rays may be responsible for the pleural and pulmonary disease process must include the coincidence of cause and effect in the same region.

The differential diagnosis between pleuropneumonitis following roentgenization and certain forms of pulmonary metastasis may be difficult. This distinction may require periodic observation. In certain cases the differentiation between the pleuro-pneumonitis due to roentgenization and lung abscess must be made; such a distinction is rarely difficult if the clinical features of pulmonary suppuration such as the abundant expectoration of pus and the irregular and rather high fever are borne in mind. It may be necessary also to distinguish a pleuropulmonary reaction to the roentgen rays from other inflammatory manifestations, but the correlation of the history and physical findings with the history of roentgen ray exposure usually constitutes a satisfactory basis for the diagnosis.

Nearly all writers on the subject have conveyed the impression that pleuropneumonitis following irradiation of the thorax is related in some way to the use of roentgen rays of short wave length. While the voltage at which the rays are generated and the filter selected probably exert a certain limited influence on the process, the chief factor is quantitative and related to the duration of the exposure. In other words inflammatory manifestations in the pleura and lungs are more likely to supervene the nearer the dosage approaches or passes beyond the limit of skin tolerance. In the author's experience pleuropulmonary reaction never follows the first course of roentgen ray treatment and seldom follows the second, but on further treatment given with full dosage the occurrence of such manifestations is probable.

## ÆSOPHAGUS AND MEDIASTINUM

Maydl V. A Case of Fatal Rupture of the Cardia in Dilatation for Cardiospasm with Stark's Sound (Ein Fall einer tödlichen Kardiarruptur bei einer Kardiospasmusdilatation mittels Stark'scher Sonde). *Med. Klin.* 1906, xvi, 408.

The author used Stark's method of dilating for cardiospasm in seven cases with very good results. The patients, who had been unable to swallow solid food for from two to twelve years, were completely cured. In three cases the dilatation decreased from 1 to 3 cm., the previously atonic œsophagus having re-acquired its peristalsis and tonus. The dilatations were all done on ambulatory patients. The pain felt in the breast at dilatation soon ceased.

The fatal rupture caused by the dilatation occurred in the case of a man 24 years of age who was suffering from œsophageal symptoms which had become so severe in the last four years that he was able to swallow only fluids. Numerous treatments with sounds and the administration of drugs to overcome the spasm were of no benefit. The roentgen ray examination made with a contrast meal showed dilatation of the œsophagus with the formation of an isthmus. From this point only a very fine passage led into the stomach. Stagnation of the contents of the œsophagus lasted for six hours. By means of the œsophagoscope it was possible to see the spastically contracted mouth of the cardia at a depth of 43 cm. No trace of infiltration or ulcer was noted. A Stark sound was passed under X-ray control and the dilator fitted into place in the passage, a procedure that did not require any particular exertion of force. No blood appeared on the sound. That night the patient suddenly collapsed. Death occurred eighteen hours after the dilatation.

Autopsy revealed a tear 1½ cm. long and ½ cm. wide in the mucosa and musculature of the posterior wall of the cardia directly below the diaphragm and a diffuse peritonitis.

GUSTAV (Z)

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

**Ssokolovskij M. P.** The Absorption of Bacteria from the Abdominal Cavity (Beitraege zur Frage ueber Iesorption der Bakterien aus der Bauchhoehle) *Vestnik chirurgii i pogranichnykh oblastey* 1925 11 20

The author studied the conditions of resorption of bacteria from the abdominal cavity especially the importance of the lymphatic system and omentum in this process in a series of experiments on dogs. Various kinds of foreign bodies such as dyes and hens erythrocytes and of bacteria such as bacillus pyocyaneus and bacillus prodigiosus were introduced into the abdominal cavity. The lymph from the thoracic duct was then studied.

The bacteria were found in the arterial and venous blood as well as in the lymph of the thoracic duct after from ten to fifteen minutes. Ligation of the thoracic duct prevented their entrance into the general circulation. Extirpation of the great omentum did not reduce the resistance of the body to infection and had no influence upon the resorption of bacteria and foreign bodies.

The most important conclusions to be drawn from these experiments are the following:

- 1 The resorption of bacteria and insoluble powders introduced into the abdominal cavity occurs by the lymphatics and not by the blood vessels.

- 2 The lymphatics have a marked capacity for resorption.

- 3 In resistance to an infection an important factor in addition to the action of the great omentum and the peritoneal exudate is the resorption of bacteria through the lymphatic vessels into the general circulation. The latter results in a mobilization of all of the protective powers of the body.

Алиев (Z)

**Kirschner** The Treatment of Suppurative Diffuse Peritonitis (Die Behandlung der eitrigen freien Bauchfellentzuendung) 30 Tag d. deutsch Ges f. Chir. Berlin 1926

Kirschner first reviews briefly the various hypotheses advanced to explain deaths from suppurative diffuse peritonitis. According to one theory the toxins cause paralysis of the vascular centers in the medulla oblongata. This supposition is open to the objection that the blood pressure falls only a short time before death. It is more probable that the toxic effect is exerted upon the capillaries of the abdominal cavity as the result of which the portal circulation is injured, the blood accumulated in the abdominal cavity being transported no further. There is as it were a hemorrhage into the abdominal cavity. However even this theory is

not supported by conclusive evidence. Therefore for want of an explanation of the cause of death reliance must be placed upon statistics to determine the proper method of treatment.

From a review of the cases treated at the Koenigsberg Clinic during the last thirty years and 10 000 case records which Kirschner collected by a questionnaire sent to twenty three clinics and hospitals it becomes apparent that the cause of peritonitis is a factor in the outcome of the condition. In the cases due to appendicitis the mortality was 35.2 per cent in those due to gastro intestinal perforation it was 58.2 per cent and in those following operation it was 100 per cent.

Moreover it appears that the resistance to the disease varies at different ages. Of 1 000 patients 13.5 per cent died before the fifth year of age, 1.00 per cent in the fifteenth year, 10.1 per cent at the age of 50 years, 20.3 per cent at the age of 60 years and 44.3 per cent at the age of 70 years.

The constitution also plays an important part in resistance to the condition. Of chief importance however is the time at which operation is done. The mortality of operations performed within the first twelve hours was only 24.0 per cent while that of those done within from twelve to twenty four hours was 32.4 per cent, that of those done after from twenty four to forty eight hours 45.4 per cent and that of those done after forty eight hours 66.6 per cent. Therefore every case of acute diffuse peritonitis which is operable should be operated upon as soon as possible. When the diagnosis is certain the only exception to this rule are cases of peritonitis due to the gonococcus and the pneumococcus. The latter are rarely diagnosed before operation, the majority of cases coming to operation under the diagnosis of appendicitis.

The author emphasizes that with the exception of Fels Leusden all of the surgeons to whom the questionnaire was sent were in agreement with regard to the fundamental principle of immediate operation.

In laparotomies the chief essential is gentleness in the handling of the tissues. The incision in the abdominal wall is made directly above the suspected focus of disease or when there is doubt in the midline. It is made large enough to allow a good view of the disease focus and an easy approach to it. The main object of the interference is the certain removal of the source of infection in the simplest manner. If possible a perforated organ should be extirpated. An exception to this rule in the opinion of most surgeons is the perforated gastric ulcer for which more conservative operative methods for the elimination of the infection are advisable. The extirpation of large sections of gut should be avoided as much as possible.

With regard to the manner of removing exudate found in the abdominal cavity—whether this should be removed by irrigation or by dry sponging—there is a difference of opinion. Thirteen of the clinics to which the questionnaire was sent were in favor of irrigation, fourteen in favor of sponging and five reported that they sometimes follow one plan and sometimes the other. The statistics do not show any marked difference in the results. The author recommends irrigation with physiological salt solution for the removal of exudate which is uniformly distributed over the entire abdominal cavity and sponging for the removal of that which is localized.

Kirschner is opposed to the introduction of drugs such as ether, camphorated oil, elmocid, pepsin, hydrochloric acid and rivanol, into the abdominal cavity. Only two of the surgeons questioned were in favor of it. The mechanical emptying of the gut at operation, which is so important in ileus and the primary formation of an intestinal fistula should be omitted. Just as ineffective are attempts at drainage of the free abdominal cavity. If it is possible definitely to remove every focus of infection the abdominal wound should be closed completely. If such thorough removal is impossible only the locally circumscribed focus of infection should be drained. This can be walled off from the free abdominal cavity by tamponade. Investigations have shown that the drain is completely walled off after from twelve to twenty-four hours. The secretion that comes away thereafter is only the secretion from the drainage canal. Drainage of the cul de sac of Douglas first suggested by Rehn, and the Rehn-Fowler low position of the pelvis which have been recommended for this purpose, do not lead to the desired result. They should therefore be omitted and the patient placed in the horizontal position or the position that is most comfortable.

In the after treatment the general resistance, the tone of the blood vessels and capillaries, and the heart action should be strengthened. Camphor preparations especially, when used indiscriminately, have not proved as beneficial as digitalis and suprarenin. Especially important is the use of morphine, the sovereign remedy for sparing the heart. Fluid should be administered by rectal and intravenous drip infusions in quantities sufficient to produce from 1 to 1½ liters of urine daily. Instead of sodium chloride solution, normal and glucose solution may be used. According to recent investigations it is advantageous to add insulin to improve the utilization of the sugar.

When vomiting occurs, periodical lavage of the stomach or drying of the stomach by means of a retention catheter through the nose and aspiration are of value. Of greatest importance is the stimulation of intestinal function. This evacuates the toxins accumulated in the intestine, removes the blood from the portal circulation and as was shown by the experiments of Usadel, acts against the stagnation of blood that occurs in the abdominal cavity. For this purpose, use may be made of rectal enemas

and the parenteral and oral administration of cathartics.

Pituitrin and neohormonal have often proved of value. The local application of heat tends to stimulate intestinal activity. If it is impossible to induce bowel movements by this treatment, the enterotomy of Heidenhain comes up for consideration and, in desperate cases, multiple percutaneous punctures of the gut are justified.

By following these principles it has been possible to reduce the mortality in all cases at Koenigsberg from 87.5 to 30 per cent, that of peritonitis after appendicitis from 83.3 to 20.8 per cent, and that of peritonitis after perforations of the gastro-intestinal tract from 100 to 42 per cent.

In the discussion of this report STAHNKE (Wuerzburg) discussed the relation of resorption from the abdominal cavity to the sympathetic nervous system. As the vagus and splanchnic nerves have an influence on the distribution of blood in the abdominal cavity and the permeability of the cells, they influence resorption. Stahnke demonstrated this influence in experiments on rabbits and dogs in which he first used potassium iodide and then the fluorescein test. After section of the splanchnic nerves there was an acceleration of the resorption of the exudate with lengthening of the total duration of the process, whereas after division of the vagi there was acceleration for the first few days, but then a retardation. Experiments with morphine showed a retardation in 50 per cent of the animals and an acceleration in the other 50 per cent. When peritonitis was induced artificially the resorption remained unchanged after section of the splanchnic nerves, whereas section of the vagi was followed by retardation.

A difference was evident in the reactions of the dog and rabbit. In the dog resorption was accelerated after section of the vagi as well as after section of the splanchnic nerves, whereas in the rabbit it was accelerated only after section of the vagi. In peritonitis retardation of resorption and marked retardation of excretion followed section of the splanchnics as well as section of the vagi. It is evident from these findings that in splanchnic anesthesia resorption is accelerated in cases without peritonitis and retarded in cases with peritonitis.

VOGT (Tuebingen) discussed intravenous pituitrin, sodium chloride infusion in postoperative peritonitis. He stated that he had seen a very favorable effect from the intravenous injection of 500 gm. of normal saline with four or five ampoules of pituitrin. This treatment stimulates intestinal activity and has a favorable effect on the vascular system. The pulse is retarded and the vasomotor paralysis disappears. The toxins present in the body are diluted. Diuresis is stimulated. Frequently one large infusion is sufficient, but occasionally must be repeated two or three times. Vogt obtained a cure with this treatment in 22 per cent of eighty-one cases of postoperative peritonitis. Koerte asked in what manner it was determined that these were cases of general

suppurative peritonitis Vogt replied that in the fatal cases the diagnosis made during life was confirmed.

KEYSSER (Lichterfelde) discussed colloidochemical irrigations. He stated that the hydrogen ion concentration is of the greatest importance since a solution made up according to correct principles in this respect exerts a marked bactericidal effect without injuring the tissues. From this standpoint the ordinary physiological sodium chloride solution is injurious since by reason of its hydrogen ion concentration it favors the growth of bacteria in the tissues. The hydrogen ion concentration of Ringer's solution is considerably better. Keysser referred to an article he published in the *Klinische Wochenschrift* 1926 No. 10 in which he stated that the usual disinfectants are made markedly more effective by a suitable hydrogen ion concentration. The effect of iodoform and of trypanblue is increased thereby a thousand fold. Keysser has obtained good results with irrigations of such solutions in general suppurative peritonitis. The fundamental solution the elmoicid (that is a solution found by electro-osmotic methods) is held in readiness and is diluted according to the case and the location in which it is to be used. Of six patients treated with such a solution all were cured. Two died but one of these was moribund when first seen and the other died after six days from bronchopneumonia. In the fatal cases the cure of the peritonitis was confirmed by autopsy.

LOEHR (Kiel) discussed perforations of the stomach. He ascribed the failure of operations performed after twelve hours in peritonitis due to perforation of the stomach to the absence of hydrochloric acid which favors the development of pathogenic bacteria. Naumann has rejected this theory calling attention to the fact that streptococci and staphylococci are present in every stomach but Loehr emphasizes that these are lactic acid streptococci and a peculiar form of staphylococci which are not hemolytic. He proved their non-pathogenic character by experiments with pure cultures on the inoculation of such cultures there was no reaction. In the absence of hydrochloric acid the colon bacilli come from the small intestine and the hemolytic streptococci occasionally from the mouth where they are always present. Loehr attempted to clarify this question by experiments on dogs. When the infection was not too severe he was able to effect a cure of peritonitis by irrigating with a 0.3 per cent solution of hydrochloric acid. The addition of pepsin did not increase the disinfecting power of the gastric juice.

SEELIGER (Freiburg) discussed the treatment of peritonitis. The most common variety of the condition is colon bacillus peritonitis. In its treatment it is necessary to destroy the bacillus. The commonly used sodium chloride solution is not able to do this. Ringer's solution normal and glucose solutions are also ineffective. Ether has a bactericidal power but is not satisfactory. However experiments

showed that the colon bacillus is killed by twelfth normal hydrochloric acid solution. Seeliger therefore tried this solution in ten cases of perforation of the appendix using 3 liters to irrigate the abdominal cavity. All of the cases except one were cured. One patient died of bronchopneumonia. Autopsy revealed a complete cure of the peritonitis and absence of colon bacilli.

ORATOR (Vienna) discussed the insulin-glucose treatment of postoperative shock. He called attention to the fact that the number of deaths following operations is greater on the first day than on subsequent days. This may be explained in part by the effect of shock. In shock intravenous injections of from 100 to 150 c.c. of a 30 to 50 per cent glucose solution with the addition of from 20 to 30 units of insulin have proved beneficial. The insulin increases the effect. In experiments on animals Orator proved that the sugar blockade of the internal organs is overcome by insulin.

GOETZE (Frankfort) discussed peritoneal infusion in the after treatment. Irrigation is frequently done at the Frankfort Clinic. The procedure is very methodical. The regions of the hypochondrium are treated first then the lower structures and finally the cul de sac of Douglas. Attempts at secondary irrigations and at peritoneal infusions in the after treatment have not proved successful. Moreover they may break up primary fibrous adhesions and cause a general diffuse peritonitis. Experiments on dogs showed that aseptic as well as non-aseptic peritonitis is aggravated by secondary irrigations.

KUHN (Berlin) discussed hypertonic auto-irrigation. There are two protective forces in the peritoneum—resorption and secretion. Of these secretion is the most important. It may be produced or increased by the use of hypertonic solutions. The best of these is a concentrated glucose solution. When a 30 to 80 per cent glucose solution is poured into the inflamed peritoneal cavity a biological and mechanical effect is brought about. The former consists in (1) an increase in the antagonism of the less harmful sugar-reducing bacterial flora to the various bacteria in the abdominal cavity which prevents the bacteria that are active in the abdominal cavity from forming toxins (2) the production of acid products which make the toxins innocuous and (3) the formation of exudates and transudates with bactericidal powers. The mechanical effects are an auto-irrigation the isolation of the intestinal loops by the formation of a sugar syrup between them and a dissolving of fibrin (the solvent action of sugar upon fibrin) which favors drainage. Kuhn recommends the addition of iodine to the glucose solution. He has had good results from the pouring of glucose solution into the abdominal cavity.

NOETZEL (Starbuck) agreed with Kirschner that it is impossible to drain the free abdominal cavity. Nevertheless he still uses a drain in the cul de sac of Douglas since in the first twelve hours it serves to remove any infected irrigation fluid that

may remain in the abdominal cavity. He also still advocates the lowering of the pelvis, but believes that the position need not be as upright as formerly. Up to the present time he still has used camphorated oil but on the basis of the findings of Seeliger and others, he will hereafter employ solutions of hydrochloric acid instead.

USADEL (Koenigsberg) discussed intestinal activity and the portal circulation. The blood in the general body veins moves through a uniform tubular system that is nowhere especially narrowed, but the blood in the portal system must flow through a second capillary network, that of the liver. Whereas through suction the inspiratory reduction of pressure has a favorable effect on the blood circulating in the inferior vena cava, this favorable influence is not present in the portal vein. Here it is the motor activity of the intestine that has a favoring influence on the circulation of the blood.

In order to demonstrate this Usadel performed experiments on animals in which he measured the amount of blood flowing through the main branch of the portal vein with the Huerthle hydraulic gauge and determined the effect of peristalsis upon the amount of blood flowing through. He found that in normal animals the onset of powerful peristalsis such as may be produced by irrigating large portions of intestine with hot sodium chloride solution results in a threefold increase in the volume of the current. In animals in which a severe peritonitis had been produced and there was hyperæmia of the splanchnic vessels the extremely retarded blood stream in the portal vein was doubled by the stimulation of peristalsis. Therefore peristalsis of the gut has an undeniable influence upon the amount of blood passing through the portal vein during a certain period of time. This explains why, in free suppurative peritonitis, a decrease in the blood pressure develops only when the intestine loses its automatic activity and meteorism becomes a prominent complication.

Usadel was able to show that even in normal animals moderate inflation of the small intestine with air affects the circulation of blood in the intestine in such a degree that the volume flowing through the portal vein per second is reduced to half.

In the treatment of free suppurative peritonitis it is of the greatest importance to prevent the pathological accumulation of blood in the blood vessels of the abdominal cavity. According to Usadel's investigations the stimulation of intestinal peristalsis is an excellent method for this purpose. In other investigations Usadel demonstrated the powerful peristaltic stimulating effect of the sodium chloride infusion to which Hotz has called attention. This was still further increased by the addition of peristalsis stimulating and simultaneously vasoconstricting agents such as pituitrin, which has been found very valuable in the Koenigsberg clinic in the treatment of postoperative ileus. Therefore for the removal of the blood from the portal system

in peritonitis intestinal activity should be stimulated by all possible measures among which should be included the infusion of sodium chloride solution.

SMIDT (Jena) stated that at the Jena Clinic the decision as to whether irrigation should be done or not is based on two factors, the course of the infection and the nature of the exudate. In general irrigation and drainage are avoided in peritonitis, especially in cases of serous exudates. In perforations of the stomach and traumatic gastric and intestinal injuries however irrigation is done especially when chyme elements are visible since it is desired to close the abdominal wound primarily. In injuries of the colon irrigation is not done. Smidt called attention to the frequency of peritonitis after appendicitis during epidemics of *grippe*. *Pneumococcus* peritonitis is very rare, only two cases have been observed at the Jena Clinic during the last five years.

BREITNER (Vienna) discussed typhoid perforation. He had the opportunity to observe seven cases in a hospital for war prisoners. Operation resulted in a cure in three (43 per cent). The cause of the cure was not the method of operation nor the time at which it was performed (one of the patients who died was operated upon seven hours after the perforation, and one of those who were cured was operated upon nineteen hours after the perforation) but the patient's condition and the stage of the typhoid at the time of the operation. The patients who were cured were in the third or fourth week of the typhoid and those who died were in the first or second week.

HANS (Barmen) stated that he does not attempt to drain the free abdominal cavity but drains the focus of infection. Strand drainage is often sufficient to drain a small focus deep in the abdomen. The drains need not be hollow. Hans considers good drainage of the bed of the gall bladder as most necessary. For this and for drainage of the cul de sac of Douglas he uses suction drainage.

BRUETT (Hamburg) stated that in general the same principles as those mentioned by Kirschner are applied in the Hamburg Hospital. In the course of time the mortality has been reduced from 100 to 30 per cent. For irrigation Bruett prefers hypertonic sodium chloride solution which exerts a good effect on peristalsis. He has avoided the use of hydrochloric acid solutions, fearing that they may have an undesirable chemical effect. The prognosis is influenced by the bacteriological findings. A colon bacillus peritonitis following appendicitis has a more favorable prognosis than peritonitis caused by anaerobic streptococci. A series of cases of peritonitis due to *Bacillus aerogenes capsulatus* were observed by Bruett in Eppendorf. These were characterized by hemorrhagic exudate with the odor of a corpse. In peritonitis following the perforation of a gastric ulcer resections offer a prognosis no more unfavorable than that offered by conservative operations. In twenty-five cases so treated there was only one death.

ROEPKE (Barmen) reported upon the results in 235 cases of suppurative peritonitis. The mortality was only 8 per cent when he operated within the first twelve hours but rose to 40 per cent when operation was performed after forty eight hours. Roepke is opposed to the view of Kirschner that the primary establishment of a fistula is to be avoided. He has found that without such relief the abdomen frequently cannot be closed. He considers it indicated especially in the presence of circumscribed paralysis of the intestines. In cases of typhoid perforation operation should be done as soon as possible. In one case of threatening perforation Roepke brought the affected coil forward so that the perforation took place externally.

PUSZT (Jena) discussed biological prophylaxis and treatment. He referred to his demonstration at the previous year's Congress in which he showed the effect of hot 10 per cent hypertonic sodium chloride solution. Death in peritonitis is due to a sudden overwhelming of the body with toxins. The removal of these outward is therefore of the greatest importance. Hypertonic sodium chloride solution causes a marked transudation. The stronger this is and the more of it that escapes the better. When the dressings are well saturated the prognosis is good. However these hot sodium chloride irrigations are of value only in the first stage. In the second stage when strong adhesions have already formed in the abdominal cavity they are not effective.

PUSZT carried out experiments with silicic acid added in finely granular form to the hypertonic sodium chloride solution. These showed that when the silicic acid sodium chloride solution was introduced into the abdominal cavity simultaneously with infected material the dogs remained alive whereas the control animals died. When the solution was injected twenty four hours later than the infectious material a considerable number of the animals remained alive whereas the control animals died. The silicic acid acts mechanically by plugging the lymphatic stomata and thereby preventing resorption and has also an adsorptive and lethal effect on bacteria. This is therefore a biological prophylaxis which should be applied at every laparotomy.

FREY (Koenigsberg) reported upon experiments on animals to determine the effect of the normal intestinal contents upon the development and relief of postoperative postanæsthetic and peritonic intestinal paralysis. On the one hand it is possible that when the intestine is full intestinal flatulence may result from the decomposition of the intestinal contents and the intestinal paralysis may be so aggravated by the overdistention of the intestinal wall that there is slight chance of relieving it. On the other hand it is possible that a normally filled intestine is less apt to become paralyzed than an empty intestine and responds better to peristalsis stimulating remedies after paralysis than an empty intestine since the normally filled intestine has to its advantage the stimulus exerted by its contents (sensory stimulation of the mucosa and distention

stimulus). However the animal experiments showed that the effect of injuries paralyzing peristalsis and of remedies stimulating peristalsis is independent of the state of fullness of the intestine providing it is within normal limits. The practical conclusion to be drawn from this finding is that emptiness is to be considered the ideal condition of the intestine also from the motor standpoint.

SCHÖENBAUER (Vienna) stated that the attempts to influence peritonitis by the introduction of drugs into the abdomen has been abandoned at the von Eiselsberg Clinic. The only exception is pepsin hydrochloric acid the use of which has been very satisfactory. In peritonitis due to perforation of the gastro intestinal tract the mortality was 52 per cent without the use of this remedy and 26 per cent with its use. In peritonitis after perforation of the appendix the corresponding mortalities were 25 and 8.9 per cent and in peritonitis due to perforation of the biliary passages 50 and 0 per cent. The total mortality without the use of pepsin hydrochloric acid in 164 cases was 34.7 per cent whereas with its use in 110 cases the mortality was 12.7 per cent. This shows a reduction of the mortality to almost one third. The postoperative course was also improved by the pepsin hydrochloric acid. In eight of the fourteen fatal cases no peritonitis was found at autopsy.

NEHRKORN (Elberfeld) would add to the groups of gonococcal and pneumococcal peritonitis the peritonitis of infants in which more conservative treatment is indicated. He emphasized the unfavorable prognosis in these cases. He was unable to save the life of one of the children by operation whereas once he adopted the more conservative plan for children under 2 years of age he has achieved better results. He advocates early operation for other cases and is in favor of education of the laity with regard to its advantages.

RESCHKE (Greifswald) gave the reason for the different stand of Pels Leusden which was mentioned by Kirschner. He stated that because of the unfavorable results obtained in general peritonitis a number of patients who were brought to the clinic in a very poor general condition or apparently moribund were treated conservatively. To the surprise of the clinic staff all of these patients recovered. Therefore conservative treatment has become the routine treatment in Pels Leusden's cases.

Of 138 patients with general suppurative peritonitis ninety nine (71 per cent) died. Of 106 who were operated upon eighty (75 per cent) died whereas of thirty two who were treated conservatively nineteen (59 per cent) died. From the latter should be deducted seven patients who were brought to the hospital in a moribund condition. When this is done the mortality in the conservatively treated cases is found to have been only 46 per cent. The mortality in cases operated upon on the first day was 33 per cent that in those operated upon on the third day 91 per cent and that in those operated upon after the sixth day 100 per cent. With

regard to the Kuhn method of pouring hypertonic glucose solution into the abdominal cavity Reschke claims that the hopes raised by it have not been realized. It was followed by recovery in the early cases but failed in the late cases.

KOERTE called attention to the fact that the views presented controvert everything that has hitherto been believed by surgeons to be correct. His own experience favors immediate operation after the establishment of the diagnosis.

RESCHKE stated that the Greifswald Clinic is also in favor of early operation in cases recognized early and recommends conservative treatment only in late cases.

ASTEN (Demmin) remarked that the Greifswald procedure with its conservative treatment exerts an unfavorable influence in the vicinity of Greifswald as the patients and physicians are reluctant to resort to operation.

SEYBERTH (Senftenberg) emphasized that there are cases in which the formation of an intestinal fistula is indicated and that therefore the routine avoidance of this procedure in the treatment of peritonitis is incorrect. He stated also that he observed the percutaneous puncture of the intestines for the first time at the Rehn Clinic. As he was convinced of the good effect of the procedure he has used it since.

KOERTE stated that he fears infection as a result of such punctures.

In conclusion KIRSCHNER emphasized that he cannot approve of the attitude of Pels Leusden which he regards as a return to the nihilism of thirty years ago. He sees no reason for making the peritonitis of infancy an exception. He expects no improvement in results from Kuhn's glucose solution (lymph lavage) and he is skeptical also regarding the value of the introduction of drugs into the abdominal cavity. In typhoid perforation the most difficult matter is a timely diagnosis. Kirschner believes that the perforation always occurs in the same stage of the condition. For perforations of the stomach he considers conservative measures safe. If the formation of an intestinal fistula is necessary he would prefer to do it on the following day under local anesthesia. On the other hand he has seen good results in several cases from percutaneous puncture of the intestine and therefore favors its use in very severe cases. STETTINER (7)

Pribram B O Mesenteric Lymphangitis (Ueber Lymphangitis mesenterialis) *Arch f Klin Chir* 19 6 ed 589

In numerous cases in which operation is performed for chronic appendicitis only very slight pathological changes are found in the appendix whereas the lymph channels and glands of the mesenterium and mesentery show both the macroscopic and microscopic evidences of an inflammation which has subsided.

On the basis of this observation the author discusses Virchow's suggestion that the infection may

progress from within outward layer by layer, without leaving any evidence of a subsided infection in the intestinal wall.

The hypothesis that in some cases the intestinal wall may show scarcely any inflammatory reaction when bacteria pass through it whereas the lymphatics react with distinct signs of inflammation is based on a varying immunity of different kinds of tissues.

Inflammatory processes in the mesenteric glands, especially those associated with shrinkage, may cause marked symptoms.

In order to prevent the extension of the inflammatory process of acute appendicitis into the lymph channels and glands and the symptoms dependent upon such involvement Pribram urges early operation.

Another proved cause of mesenteric lymphangitis is coprostasis. During the war the author noted inflammatory changes in the mesentery in association with megacolon a condition which is very common in Russia. HOOK (Z)

## GASTRO INTESTINAL TRACT

Koenig F The Treatment of Gastric Ulcer (Zur Therapie des Magengeschwüers) *Muenchen med Wchnschr* 1926 lxviii 51

Since in a period of four years 253 cases of ulcer were operated upon in Koenig's clinic and in a period of seven years only 107 cases were referred for operation by the medical clinic, it is evident that only a small percentage of the cases of ulcer which come to operation are sent from the medical clinic.

Morawitz attributes gastric ulcer chiefly to a continuous spasm of the gastric musculature one cause of which is the nervous constitution to which Bergmann has called attention. On the basis of research carried on in his clinic by Stahnke, Koenig concludes that the nervous influence causes a gastritis which constitutes the basis of the ulcer.

Whereas Koenig formerly operated only in cases with the classical ulcer syndrome the indications for operation recognized by him have since been broadened. In some of the cases with the classical syndrome an ulcer was found, but in others only adhesions. One group of patients were relieved of their symptoms by liberation of the adhesions whereas another group returned with the same symptoms some with ulcer and others with new adhesions.

In cases without proof of ulcer in which resection was done at the request of the internist the specimen in every case showed chronic gastritis. On the basis of this finding Koenig agrees with Morawitz that there is an ulcer sickness without an ulcer. According to the statistics of the medical clinic, only 60 per cent of ulcers can be cured by medical measures, and Koenig's own experience has shown that in a large number of cases the symptoms cannot be relieved without operation.



Koenig formerly favored gastro enterostomy but now prefers resection because investigations made over a period of years by Dahl showed that in many cases the good early results of gastro enterostomy do not persist and because experience has demonstrated that gastro enterostomy itself may be harmful. Koenig reports two very instructive cases of peptic ulcer.

In cases of perforated ulcer at the pylorus resection is best if the operation is done in the first twelve hours. In cases of ulcers at a distance from the pylorus gastro enterostomy is unnecessary. Koenig does not deny that an ulcer can be healed by gastro enterostomy but he considers this operation only an emergency procedure. The mortality of resection decreases with increasing experience of the surgeon. Koenig uses Reichel's method of resection.

In conclusion Koenig emphasizes the importance of the proper postoperative care. He states that chronic gastric ulcer is a good example of an ailment in which internal medicine alone is often insufficient and the cooperation of the internist and surgeon is necessary for a cure. STARKER (Z)

**Lindboe E** Experiences with the Resection Method of Polya in Ulcer of the Stomach and Duodenum (Erfahrungen mit Polya's Resektion methode bei Ulcus ventriculi und duodeni) *Zentralbl f. Chir.* 1926 lvi 1142

This article is based upon 129 cases in which an operation was performed for ulcer of the stomach or duodenum. In 109 cases the operation was done according to the method of Polya. In seventy one the appendix was removed at the same time it was always found to show a pathological change. In six cases the operation was undertaken because of perforation or hemorrhage. In ninety of the 101 other cases a retrocolic anastomosis was done and in eleven an antecolic anastomosis. There were four deaths.

In a series of ninety cases treated previously a subsequent examination showed a cure in 90 per cent and improvement in 4.4 per cent. The mortality was no greater than that of simple gastro enterostomy. A vicious circle and the later development of carcinoma did not occur. For the prevention of subsequent ulcers it is essential that an extensive resection be performed since by the removal of the glands secreting hydrochloric acid the chief causes of new ulcers, hyperacidity and hyperchlorhydria are decreased. The technique of the operation is simple.

The extent of the resection must be determined from the degree of hyperacidity. Anacidity is better than too great acidity. Gastro enterostomy should be reserved for cases in which resection cannot be performed. In these cases also the pylorus should be closed off as tightly as possible. Peptic ulcer developed in three of the cases reported evidently because the resection was not sufficiently extensive. STRAUSS (Z)

**Deaver J B** Intestinal Obstruction *Ann Surg* 1926 lxxvii 571

Deaver attributes the present high mortality in cases of obstruction of the intestines to late recognition of the condition and the administration of purgatives. An early diagnosis requires careful inspection, auscultation and palpation of the abdomen and a rectal or vaginal examination. The possibility of intestinal obstruction should be borne in mind in every case with acute abdominal symptoms in which the scar of a laparotomy is found. Morphine should not be given before the examination. While purgatives are contra indicated attempts to give relief by enemas are justifiable.

Intestinal obstruction occurring three or four days after an operation for acute perforative or suppurative appendicitis is sometimes difficult to differentiate from secondary abscess with circumscribed peritonitis or beginning diffuse peritonitis. The most characteristic symptoms and signs of intestinal obstruction not associated with secondary or residual abscess or diffuse peritonitis are intermittent colicky pain with stormy peristalsis, inability to pass gas and persistent vomiting. In the presence of such signs Deaver operates at once.

Paralytic distention of the bowel with regurgitant vomiting with or without hiccough and the absence of characteristic pain simulates intestinal obstruction and late peritonitis so closely that the differentiation is exceedingly difficult.

The condition found is usually leakage of intestinal contents due to causes such as ulcerative perforation of the appendix or of a coil of bowel which at operation for strangulated hernia was thought to be viable enough to recover and was therefore returned to the peritoneal cavity. The separation of a gastrojejunostomy or enteroenterostomy, the partial or complete opening of the duodenal stump after a subtotal gastrectomy, the escape of duodenal contents after excision and suture of a duodenal or gastric ulcer or the closure of a perforated ulcer without gastro enterostomy, or the leakage of bile after a cholecystectomy or of urine from accidental incision of the ureter or intraperitoneal rupture of the bladder.

In all of these conditions the symptoms and signs are much the same including abdominal pain, rigidity, tenderness, slight distention which is more or less general but most marked at the site of the lesion, inability to pass feces or gas, vomiting and sometimes hiccough.

Deaver regards it as better to operate and not find a lesion than to wait and then operate and find an obstruction which calls for extensive resection. In every case of acute obstruction there is a peritonitis which in the early hours of the condition is limited, the exudate being merely serous and negative for virulent bacteria. When a patient recently operated upon for an acute abdominal condition and still on a liquid diet develops cramp like pains and nausea Deaver orders gastric lavage at once. If the washings have a foul odor and on laboratory

examination are found to contain material from the upper intestinal tract he operates immediately.

In an occasional case of postoperative acute obstruction of the intestines the condition is attributable to the presence of drains. Therefore the proper disposition and careful charting of drains is essential.

The differentiation between postoperative paralytic ileus and obstruction from kinking is difficult. When Deaver is not sure of the advisability of immediate operation he prescribes anatomical and physiological rest and if improvement does not occur in a few hours he operates. In his experience jejunostomy has not been satisfactory in cases of paralytic ileus. In mechanical ileus it is of value if it is done early, but even in this condition a side track operation is preferable.

In chronic obstruction operation need not be performed immediately, unless an acute exacerbation is superimposed on the chronic condition. Chronic obstruction should be treated for ten days by gastric lavage, nourishment by mouth, the administration of normal saline solution with glucose and whiskey by the Murphy drip method, the application of an ice bag to the abdomen and hypodermic injection of morphine to relieve the pain. During this time a study of the blood chemistry and renal function should be made and circulatory defects corrected or at least treated. Before operation the intestinal tract should be cleared by the administration of mild purgatives, high enemas of sweet oil, and occasionally by cecostomy.

Chronic obstruction Deaver believes is often of carcinomatous origin. While an X-ray examination is important it is not infallible. Visible peristalsis producing the ladder rung abdomen is positive proof of the presence of chronic obstruction. Obstruction of the right half of the colon is usually associated with constipation and obstruction of the left half of the colon with diarrhea. The decision as to whether the operation should be performed in one or two stages can usually be made only after the abdomen is opened.

EMIL C. ROBERTS, M.D.

**Koerte W.** The Treatment of Acute Mechanical Occlusion of the Intestines (Zur Behandlung des akuten mechanischen Darmverschlusses) *Arch f. Verdauungschr.* 19 6 xxvii 83.

In the author's opinion paralysis of the intestine should not be called paralytic ileus, as the term ileus comes from the Greek *αλεα* meaning to tie up into knots, to twist into a tangle.

It is only in the chronic forms of ileus that there is at first only a stasis of the bowel contents. This leads to injury of the bowel wall secondarily as the result of distention. In such cases an enterostomy may be of benefit.

In acute mechanical occlusion of the intestine there are circulatory disturbances which if the obstruction is not removed may be expected with certainty to result in injury of the wall of the bowel. The injurious action of stasis, decomposition of the bowel contents, and resorption of toxic materials

occurs only in the further course of the condition. Spastic occlusion of the intestines which cannot yet be differentiated clinically with certainty from acute mechanical occlusion and is therefore often first recognized at laparotomy, is rare and considerably less dangerous than acute mechanical occlusion of the intestines.

The author divides cases of acute mechanical occlusion with vital indications into those of constriction of the intestine by bands, those of incarceration of the intestine in an intra abdominal peritoneal sac or defect, those of volvulus and those of invagination. Gall stone ileus must also be included in this group since at the point where the gall stone occluded the intestine in the author's cases there were frequently deposits of fibrin on the serosa and in two cases perforation occurred. To this group belong also cases of kinking of the bowel since in these there occurs a mechanical injury to the bowel at the point of kinking. In all of these cases the condition can be benefited as in cases of incarcerated external hernia only by operative removal of the constriction.

In only one of the author's cases of invagination that of a child who came under observation very early, did the condition correct itself spontaneously, the intussusception disappearing with a gurgling sound during examination by palpation. As a rule we cannot count on the loosening up of a constricting band, the untwisting of a volvulus, or the passing of a gall stone without surgical assistance. The results of operation are so often poor because the patients so frequently come to operation late. The earlier the operation is performed the better the results.

Of 230 patients operated upon for acute mechanical obstruction of the intestine 140 were females. The higher incidence of the condition in the female is explained by the frequency of inflammatory processes of the uterus and adnexa which lead to the formation of bands and adhesions. The total mortality was 43.2 per cent—44.3 per cent in the cases of females and 40.1 per cent in those of males.

At the outset of the condition pain may be absent but the cessation of intestinal evacuation, increasing vomiting, flaccidity of the abdominal wall and visible, palpable and audible peristalsis of the intestine above the point of the occlusion are infallible signs. The diagnosis of ileus can and must be made without the assistance of the X-ray. Wahl's sign, a palpable incarcerated loop which has become distended with gas is not a certain one except in volvulus of the sigmoid flexure since the point of incarceration becomes covered by the distended loop above it and therefore cannot be palpated. Vomiting occurs later in intestinal occlusion than in peritonitis. Intestinal occlusion that has advanced to the stage of peritonitis often cannot be differentiated from primary peritonitis but the indications for laparotomy are the same in both conditions. When peritonitis has already developed the prognosis of operation is unfavorable. When there is intestinal paralysis, the prognosis is very grave.

The character and location of the obstruction can be determined before operation in only a few cases and even in these only approximately. Invagination is usually recognized before operation because it occurs chiefly in children and is characterized by the appearance of a sausage-shaped tumor and tenesmus with scanty evolutions of blood and mucus. Volvulus of the sigmoid flexure was recognized in several of the author's cases from the palpable loop tensely filled with gas which extended up into the epigastrium. In cases of gall stone ileus and adhesions due to inflammatory diseases (appendicitis, parametritis) the history leads at least to a probable diagnosis.

In the author's hospital cases the mortality was 45.5 per cent whereas in his private cases it was only 20 per cent. The difference was due primarily to the fact that his private patients came to operation earlier. Since in both groups there was a decrease in the mortality in the course of time it is to be assumed that improvement in the operative technique was a factor in the improvement of the results. The patient's age and resistance and the character of the obstruction also play a part in determining the results of operation. Among the patients under 1 year of age the mortality was 60 per cent and in those over 60 years it was 58 per cent.

The factor of chief importance in the outcome of operation is the time at which the operation is performed. In the cases operated upon on the first day the mortality was only 10 per cent whereas in those operated upon on the second, third and fourth days it ranged from 38.6 to 33.3 per cent; in those operated upon on the fifth day it was 50 per cent and in those operated upon on the ninth day it was 100 per cent.

With regard to the character of the obstruction the author states that the most favorable results were obtained in cases of incarceration in peritoneal recesses. In this group a cure was obtained in 75 per cent. In cases of kinking due to adhesions the incidence of cure was 65.4 per cent and in those of obstruction from peritoneal bands it was 63.1 per cent. In cases of invagination a cure was obtained in 59.4 per cent; in those of gall stone occlusion in 53.4 per cent and in those of volvulus in 50 per cent. The poorest results were obtained in nine cases of constriction by bands or volvulus due to Meckel's diverticulum. In this group recovery resulted in only 33.3 per cent.

At operation the author makes an incision from 10 to 12 cm. long in the midline beginning somewhat above or at the umbilicus and extending it downward toward the symphysis. In acute vital intestinal occlusion an enterostomy without loosening of the obstruction is not sufficient. After the abdomen is opened the intestinal loops protruding out of the abdominal cavity are enveloped in hot compresses wet with physiological salt solution and are well protected against contact with the iodine skin surface.

A search is then made for the point of obstruction by following the distended loops downward or the collapsed loops upward. Great care is taken to avoid tearing the intestine at the point of the constriction. When possible the endangered loop is raised out of the abdominal cavity and carefully packed off.

The emptying of the over-filled intestine of its decomposing contents is of the greatest importance. This is accomplished by introducing a thick rubber tube through an incision in an intestinal loop which has been taken out of the abdomen, led through a hole in a large piece of sterile water proof cloth and surrounded by gauze. During the process of emptying the assistant strips the intestine down toward the opening beginning with the highest loops. The emptied and sutured intestine is then washed off with physiological salt solution at a temperature of 40 degrees and gently replaced in the abdominal cavity. If the intestine contracts when hot salt solution is sprinkled on it it is viable.

The intestine emptied of its contents quickly resumes its normal function. Injury to the abdominal contents by this method of relieving the intestine is not to be assumed since in eighty-three cases so treated recovery resulted in 66.3 per cent. Gangrene of the bowel renders the prognosis considerably less favorable.

In twenty-seven cases of intestinal resection for acute occlusion a cure resulted in only 27 per cent. In some cases removal of the obstruction was followed by enterostomy and entero-anastomosis as a precautionary measure but these procedures were not satisfactory and in several instances resulted in fistula which required even more radical operations for their closure.

In conclusion the author states that the most important factor in the improvement of the results of treatment is early operation. As regards the operative technique itself he states that improvement in the results is to be hoped for in methodical emptying of the over-filled intestine in an otherwise conservative and faultlessly aseptic procedure.

HIRTZE (Z)

**Schmieden. Precancerous Diseases of the Intestine Especially in Polyposis (Precanceröse Erkrankungen des Darmes insbesondere bei Polyposis). 50. Tag d. deutsch. Ges. f. Chir. Berlin 1926.**

Since the best treatment of carcinoma is early operation it is essential to recognize precancerous conditions. In his studies of polyps the author discovered a characteristic form of cell which he designates as a precancerous cell. He distinguishes three types of polyps: (1) those which contain normal cells; (2) those which contain precancerous cells; and (3) those in which true cancer nests are present.

According to the findings of the investigations reported it is incorrect to regard polyps as harmless structures. A specimen should be removed with the proctoscope from every polyp and subjected to careful microscopic examination. Schmieden has known of instances in which the pedicle contained also

lately harmless tissue, whereas further up characteristic precancerous cells were found and in other areas definite cancer nests

The number of secondary polyps which may contain precancerous cells is much greater than was formerly believed. In some cases the X-ray picture shows them distinctly, but in others only an exploratory laparotomy will reveal their extent and the necessary extent of operation. Roentgen therapy is of little avail in these cases, extensive resection is indicated.

The method of spread of the polyps sheds new light on the question of recurrences and the origin of intestinal carcinoma. Since 60 per cent of polyps undergo malignant degeneration, it seems evident that the cancer has its origin in irritation. The preliminary stages are similar to those assumed by Konjetzny for cancer of the stomach.

In the discussion of this paper, JUENGLING (Luebingen) reported upon a family followed for several generations, many members of which had either a polyposis or a carcinoma of the rectum.

When Anschuetz inquired whether Schmieden's investigations covered solitary polyps as well as polyposis, Schmieden answered in the affirmative.

ORATOR (Vienna) reported that he had observed malignant degeneration of papillomata also higher up in the intestinal tract. STETTNER (Z)

**Harrington S W** Traumatic Retroperitoneal Rupture of the Duodenum. Traumatic Intra-peritoneal and Extraperitoneal Rupture of the Duodenum. Strangulated Meckle's Diverticulum in the Right Femoral Canal. Solitary Non Parasitic Cyst of the Liver. *Surg Clin N Am* 1936 vi 1122

Harrington reports two cases of traumatic rupture of the duodenum in one of which the rupture was retroperitoneal and in the other both intraperitoneal and extraperitoneal. In neither case was there any evident injury of the abdominal wall but in the first one a small rupture of the fascia, muscle and peritoneum was discovered toward the close of the operation. Both patients were in a state of shock and neither recovered.

In the first case a large crepitant hemorrhagic mass was found in the root of the mesentery and over the second portion of the duodenum at the site of a linear opening about 5 cm in length through which food and duodenal contents were draining into the retroperitoneal tissues. Convalescence was fairly favorable until a duodenal fistula developed.

In the second case there was no pain so long as the patient was not disturbed, but palpation revealed marked tenderness in the right upper quadrant. This patient was seen almost immediately after the accident but the leucocytes numbered 22,000 in comparison with nearly 28,000 in the first case. Thirst was the chief complaint. Bile stained blood mucus and food particles were found in the abdominal cavity but exploration revealed a small perforation on the anterior wall of the second part

of the duodenum and a considerably larger perforation in the posterior wall. There was also considerable traumatization of the intervening tissue. The liver was ruptured in two places and the spleen in several. For six hours after the operation the condition was fairly good, but the pulse and temperature rose and death occurred after twelve hours.

The author attributes injury of the duodenum which occurs in 10 per cent of the reported cases of traumatic rupture of the intestinal tract, to the fixed position of this portion of the intestine in front of the spine. The early leucocytosis is probably attributable to both the intra-abdominal hemorrhage and the contamination.

**Moffitt H C** The Medical Aspects of Duodenal Ulcer. *Canadian M Ass J* 1926 xvi 1044  
**Starr F N G** The Surgical Treatment of Duodenal Ulcer. *Canadian M Ass J* 1926 xvi 1051  
**Dickson W H** The Radiological Aspect of Duodenal Ulcer. *Canadian M Ass J* 1926 xvi, 1053

MOFFITT states that today the surgeon and internist see the main problems of duodenal ulcer from a common viewpoint. Certain factors and phases in the etiology, physiology, and pathology of the lesion remain obscure, but definite knowledge has been gained as to the course, symptoms, and treatment.

Ulcers may be produced experimentally by mechanical, chemical, or thermic irritation, by resection of the vagi or splanchnics or of the adrenals or parathyroids, and by the local or intravenous injection of chemicals, bacteria, or bacterial or metabolic toxins.

Many ulcers in man heal promptly without symptoms. The formation of the chronic "clinical" ulcer requires definite injury to the cells of the mucosa and the action of certain forces inhibiting repair of the damaged tissues. Ischemia due to excessive and persistent local muscle spasm may play a part.

The profound influence on the digestive mucous membrane of toxins or bacteria reaching it by way of the blood stream has been proved conclusively by experimental and clinical evidence in recent years.

Rosenow says that streptococci, irrespective of their source, exhibit, when of a certain grade of virulence, an affinity for the gastric mucous membrane and when injected intravenously may cause an ulcer of the stomach or duodenum.

The healing of an ulcer is inhibited by many forces among which are fatigue, exposure to cold, long continued nervous strain and worry, chronic infection and bad habits which lower the general resistance. McCarrison noted the development of both gastric and duodenal ulcers in monkeys and guinea pigs fed on diets deficient in vitamins. Although ulcer may be formed and may persist with absence of free acid or even with achylia it has been recognized since the time of Celsus that peptic digestion plays a large part in keeping active the so-called chronic or clinical ulcer.

Duodenal ulcer is a common lesion at least six or eight times as common as gastric ulcer. Multiple ulcers are recognized with increasing frequency. The extension of the inflammation without perforation may result in abscess or in adhesions. Abscess is rare but adhesions are exceedingly common. Congenital abnormalities of the duodenum may be found associated with ulcer.

Among the most important complications are stenosis of the pylorus from spasm inflammatory edema and the formation of firm scar tissue. The most striking clinical feature of duodenal ulcer is periodicity. A carefully taken history will reveal this in from 80 to 90 per cent of cases. Early symptoms may be unnoticed or obscure or so abrupt and severe as to render the picture confusing but as time goes on cycles of activity are marked by the most characteristic events and succeeded by intervals of latency in which the patient may be able to eat any kind of food without any disturbances.

The lesion is uncommon in children and young adults. This may be explained by the greater freedom from infection nervous and physical strain and bad habits and the greater activity of the defense mechanism such as the reticulo endothelial system in the young as compared with the old.

Perforation when acute is practically always the rupture of an ulcer on the anterior wall. There seem at times to be epidemics of acute perforating ulcers. Vomiting may be an occasional sign but when it is persistent should suggest another diagnosis or complications especially obstruction. X ray examinations are invaluable and should be made to supplement the clinical investigation. Negative evidence should lead to a careful review of the clinical diagnosis. Excessive secretion of high acidity food remnants from the night before and sarcines or casts in large numbers in the sediment indicate obstruction of low or high degree.

In the differential diagnosis the periodicity of the pain its diurnal variations and its modification by various factors are of great significance. Marked changes in the familiar sequence of symptoms may indicate complications such as obstruction and adhesions or of the development of some other abdominal condition. Frequently the onset of symptoms occurs soon after an abdominal operation. As a rule the patient with ulcer has had insufficient medical treatment.

On the basis of our present knowledge the treatment aims at the removal of causes of nerve irritation and muscle spasm the control of infection as far as possible and the neutralization of gastric juice corrosion. In preventive treatment regulation of the patient's habits care of the nervous system frequent meals the judicious use of drugs such as alkalies bromides and atropine are indicated.

It is nearly unanimously agreed that in the early stages of the condition medical treatment should be given a trial. The initial treatment should be thorough. Ambulatory treatment may alleviate the symptoms but is less apt to effect a cure.

The experience of surgeons indicates that partial perforation occurs in about 20 per cent of duodenal ulcers. The pancreas may be deeply eroded and chronic pancreatitis may result. The author knows of two cases in which diabetes developed. Free perforation into the peritoneal cavity is prevented in most cases by the omentum or adjacent viscera.

The patient may complain of pain of a gnawing burning or boring character which frequently becomes sharp and cramp like. This pain may radiate to the right or left or to the back but as a rule is most severe in the upper mid abdomen. Once established it exhibits remarkable uniformity regularity and what Moynihan has termed punctuality.

The importance of a careful study of the sequence of events in a twenty four hour period during the active stage has been particularly emphasized by Sippy and Lusterman. The condition is characterized by absence of symptoms when the stomach is empty the occurrence of pain from one to three hours after the ingestion of food the relief of the pain by food its recurrence in greater severity from two to three hours after the midday meal and its relief when the stomach becomes empty or when food is taken. The cessation of the pain after the administration of alkali vomiting and gastric lavage its modification by rest and compresses its aggravation by certain foods exposure to cold and nervous and physical strain offer important diagnostic aid. Hemorrhage is much less frequent in private patients than in hospital patients probably because in the former the disease is recognized earlier and the complications are therefore fewer.

The most rational scheme of medical treatment yet evolved for duodenal ulcer is that of Sippy. Its principles are sound and its results encouraging. We have learned the danger of the excessive administration of alkalies especially in cases of retention or coincident renal or hepatic disease.

Indications and contraindications for operation should be studied carefully by both the internist and the surgeon since as Lusterman has noted poor results from operative treatment are due more often to a careless selection of cases than to poor surgery. It is the duty of the internist to prepare the patient properly for operation. Lavage transfusion control of alkali dosage the administration of glucose by rectum or intravenously and hypodermoclysis of 1 per cent salt solution are measures which have contributed enormously to favorable operative results.

Surgeons have learned to appreciate the value of postoperative treatment. It takes weeks or months to heal a chronic ulcer even after gastro enterostomy.

STARR states that duodenal ulcers following severe burns are becoming very rare because of the improved treatment of burns by the immediate application of a 5 per cent tannic acid solution direct blood transfusion to combat shock and exsanguination transfusion.

Perforating duodenal ulcers must be recognized and operated upon early. Cautery or knife excision with closure of the opening is sufficient. In cases of penetrating ulcers with marked inflammatory reaction it is necessary to do a posterior gastro enterotomy in addition to the cauterization of the ulcer in order to keep the patient from starving to death. The gall bladder and appendix should be examined for infection. Duodenal ulcers associated with active hemorrhage should not be operated upon. In such cases 5 c m of calcium chloride and if necessary a transfusion may be given.

In cases of ulcer of the anterior surface of the duodenum Starr cuts the pyloric ring and performs some type of pyloroplasty. In cases of large callous ulcers producing complete obstruction he does a partial gastrectomy. The duodenum is closed and an anterior Polya or a posterior gastro enterostomy is done.

After the operation the patient is watched for the development of alkalosis or acidosis and is treated accordingly. When the patient is discharged from the hospital he is given instructions as to diet and general hygiene.

DICKSON calls attention to the fact that gall bladder disease, carcinoma of the pylorus, appendicitis, renal calculus, tabes, duodenal ileus and abnormalities of the ligament of Treitz may give rise to symptoms identical with those of duodenal ulcer. In such cases a careful x ray examination is of the greatest importance in the diagnosis.

The competent roentgenologist is able to make a correct diagnosis of duodenal ulcer in from 93 to 95 per cent of the cases. About 90 per cent of duodenal ulcers occur in the first portion of the duodenum, the caput duodenalis, a fact of great advantage to the roentgenologist as this portion of the duodenum fills better and remains filled longer than the other portions.

There are two methods of examination. The first depends almost entirely on the use of the fluoroscope. Roentgenograms are made only for record. This method is used throughout Europe and in some American clinics. The second method consists in the making of serial roentgenograms as suggested by Cole. In this procedure no screen is used. The number of roentgenograms made ranges from thirty-five to fifty. Dickson has combined the two methods. After screening the patient in the upright and horizontal positions he makes from twelve to fifteen plates.

Deformity of the caput of the duodenum is the direct evidence sought. This is caused by the crater of the active ulcer by fibrous or scar tissue in a chronic or recurring ulcer, and, in some cases by spasm. The most common deformity caused by an ulcer is the formation of the clover leaf cap. A crescentic or bud like projection is often observed protruding from the lesser curvature side of the caput. This is due to the crater of the active ulcer in which the mucosa and part of the muscularis are destroyed and the defect is filled with the barium.

Chronic duodenal ulcer may produce so much scar tissue that the caput is virtually obliterated and cannot be visualized. In such cases we must depend to some extent on indirect evidence such as hyperperistalsis and retention to establish the diagnosis. In cases of chronic perforating ulcers due to localized peritonitis an x ray examination will reveal an accessory pocket. The outline of the pocket is usually irregular and the fistulous tract leading to it may or may not be visible. A duodenal diverticulum may be confused with an accessory pocket. The latter however is usually smooth and round and contains no gas or secretion.

Deformity of the caput is often caused by adhesions of gall bladder origin. In such cases the caput will be found somewhat angulated upon the pyloric end of the stomach by the drag of the adhesions. The dilated gall bladder itself causes deformity of the caput but can be differentiated by the fact that it presents a smooth round pressure defect in the latter.

The indirect signs of duodenal ulcer are hypertonicity with increased peristalsis and decreased emptying time in the non obstructive or early obstructive cases and decreased peristalsis with increased emptying time in cases of long standing obstruction. Reflex duodenal spasm may be excluded by the use of antispasmodics or by keeping the patient on a milk diet for several days preceding the examination. MERLE R. HOON, M.D.

Mayo C. H. and Powell L. D. The Colon as a Urinary Receptacle. *Surg. Clin. N. Am.* 1926, vii, 1131.

Mayo and Powell discuss transplantation of the ureter into the sigmoid and report three cases in which the operation was performed by Coffey's method. They believe that the operation might be widely employed in cases of severe injury and loss of substance or control of the sphincters, as well as in cases of cancerous growths of the bladder.

Altogether they have seen about 100 cases of exstrophy of the bladder. In six cases of the bladder had developed. The operation of transplantation should not be performed before the age of 5 years.

The first case reported was one of epispadias in a boy aged 13 years. The left ureter was transplanted thirteen days after the right ureter. Rectal control of the urine was excellent.

The second patient was a woman 27 years of age. Exstrophy of the bladder was complicated by severe hydronephrosis of the left kidney with obstruction of the left ureter. The right ureter was transplanted into the sigmoid with a good result. More than a year later the patient complained of pain in the left side of the abdomen. As the left kidney was found to be functionless it was excised with its ureter. In this case the symphysis pubis was missing and both uterus and vagina were double.

In the third case that of a woman aged 30 years exstrophy of the bladder was associated with right

into the blood by transplantation of the common duct into the inferior vena cava?

What relationship is there between the clotting elements and cholesterinæmia bilirubinæmia bile acids and liver function?

The thrombin and fibrinogen were determined quantitatively. After obstruction of the common duct there was a marked and very rapid decrease in the thrombin. The activators disappeared from the blood in from three to four weeks but the fibrinogen content showed little change. The cholesterin increased to four or five times the normal in the first three or four weeks but then decreased. The bilirubin content of the blood did not increase progressively but receded at the end of the fourth week whereas when the obstruction continued the mechanically and chemically changed liver cells produced progressively less bile and pigment.

It was impossible to determine the quantities of bile acids that circulated in the blood of the cholemic animals but it is certain that the smaller the quantity of bile acids excreted into the blood the longer the icterus persisted.

If the bile and bile constituents circulating in the blood have a direct influence upon the blood or blood vessels this effect would be expected when the bile constituents accumulate in the blood. Such however is not the case. Disturbances in the clotting system are most apt to occur when the function of the liver is reduced. This is in agreement with the fact that the intravenous injection of bile and the implantation of the common duct into the inferior vena cava caused no demonstrable disturbance in the clotting process. Liver insufficiency in obstruction of the common duct is manifested by a distinct disturbance of the function of urea formation.

On the basis of his clinical investigations the author recommends the quantitative determination of thrombin in cases of icterus in which operation is contemplated. The procedure which is simple furnishes valuable information with regard to the condition of the clotting processes and when the activators are deficient makes it possible to increase the thrombin elements in the blood by the introduction of normal blood.

WILDEGANS (Z)

**Pancoast H K.** The Roentgenological Diagnosis of Liver Abscess with or without Subdiaphragmatic Abscess. *Am J Roentgenol* 1926 xvi 303

Having had the opportunity to examine an unusual number of cases of hepatic abscess during the past three years and having failed to render an exact diagnosis in many of them the author made a study of all new cases and of cases of other conditions which were difficult to differentiate. As a result of this study he believes that he has evolved a process of reasoning and interpretation which makes the diagnosis of liver abscess possible in most instances and renders the roentgen examination of value to the surgeon.

In the type of cases discussed the important avenue of infection of the liver is the portal circulation or the biliary ducts. A correct history of the case is of paramount importance since upon it must be based the diagnostic procedure and the interpretation of the findings. Roentgenoscopy is absolutely essential. Single flat bedside films have little diagnostic value. Pneumoperitoneum may be of value in some instances but is entirely unnecessary and would be impracticable in serial study which is so often required and might be very dangerous.

Numerous cases are cited in detail with roentgenograms illustrating the findings.

ADOLPH HARTUNG M D

**McIndoe A H.** Intrahepatic Lithiasis Associated with Multiple Internal Biliary Fistulae. *Surg Clin N Am* 1926 vi 1233

McIndoe reports a case of intrahepatic cholelithiasis associated with an internal biliary fistula between the gall bladder and colon and the duodenum and cystic duct. On analysis the stones proved to be bilirubin cholesterol stones containing no calcium. The terminal condition was acute suppurative cholangitis with multiple abscesses in the right lobe of the liver. The patient had never suffered pain although the ducts were crammed with stones and until the onset of the acute cholangitis had been only slightly jaundiced.

**Duchinosa S I.** Temporary Clamping Off of the Hepatoduodenal Ligament for Bloodless Operations on the Liver (Ueber temporäre Ablmung des Ligamentum hepatoduodenale fuer blutlose Operationen an der Leber). *Vestnik khir i gogranichnykh oblast j* 1925 v 34

From experiments on dogs with regard to the effect of clamping of the hepatoduodenal ligament the author draws the following conclusions:

- 1 Dogs cannot survive one hour's stagnation of the blood in the portal system.
- 2 After clamping for five minutes the liver becomes quite exsanguinated. The method is therefore a very good hemostatic procedure.
- 3 After the clamping the blood pressure sinks especially in the first five or ten minutes. The degree of the decrease and the return to normal vary greatly in different animals.
- 4 If the clamping period exceeds thirty five minutes the visomotor apparatus is severely injured.

The chief cause of the fall in the blood pressure with functional disturbances of the central and peripheral visomotor apparatus seems to be the clamping of the portal vein. The isolated clamping of this vein is followed by a less marked fall in the blood pressure than the clamping of the entire hepatoduodenal ligament but is not sufficient for a bloodless operation.

Shutting off of the arterial current lowers the blood pressure by half. A decrease is noted also when the common duct is clamped.

7 Subcutaneous injections of sodium chloride solution do not prevent the fall in the blood pressure. Clamping of the superior and inferior mesenteric arteries is too severe a measure for a weakened patient and is followed by a marked fall in the blood pressure. The fall in the blood pressure can be overcome only by compression of the aorta below the diaphragm for from thirty to forty minutes.

8 Clamping of the hepatoduodenal ligament for half an hour does not cause any special functional disturbances in the circulatory organs, kidneys, pancreas, liver or intestines.

9 In the pathogenesis of the fall in the blood pressure which follows clamping of the hepatoduodenal ligament the mechanical stoppage of the circulation plays an important part. Intoxication is also a factor, but in the experiments reported no reflex effects were noted.

10 Toxæmia is recognized by the demonstration of vasodilating substances.

11 Clamping of the hepatoduodenal ligament is not a harmless procedure but may be done under precautions in cases of profuse liver hæmorrhage.

ALIFON (Z)

Higgins G M. and Mann F C. Consideration of the Gall Bladder with Reference to the Process of Emptying. *Surg Clin N Am* 1926 vi 1 41.

Recent studies on the physiology of the gall bladder have in large part dealt with the manner in which the vesicle empties. Factors that have appeared to students of the problem to be instrumental in the process are the secretory pressure of the liver, the intra abdominal pressure, the respiratory squeeze, the tonicity of the common duct sphincter and the contractility of the intrinsic muscularis of the gall bladder tunic.

Following a diet of egg yolk and cream, the gall bladders of animals invariably empty through the cystic duct within an interval of from three to five hours. Studies on certain fish, amphibians, birds and mammals have proved this to be true. Experiments on guinea pigs are reported wherein the gall bladder was isolated from the peritoneal cavity and watched for an interval following the intraduodenal administration of the test diet. Under these conditions the gall bladder partially empties by the contraction of independent muscle areas gradually changing its shape and reducing its content of bile through the common duct.

Local anesthesia permits a study of the normal gall bladder of the dog undisturbed by the effects of ether. By ligating all hepatic ducts and intubating the common duct, it is possible to study the intrinsic movements of the gall bladder following a fat diet and to record these by means of a manometer and drum.

The authors concluded that the gall bladder empties by the contraction of its own intrinsic musculature, that the secretory pressure of the liver is of no great importance in the emptying of the vesicle, that the intra abdominal pressure is not an important factor in the emptying of the vesicle,

and that the sphincter of the common duct is not an inhibitor to the flow of gall bladder bile.

Stewart W H, and Ryan E J. Further Advancements in the Technique and Interpretation of Cholecystography by the Oral Method. *N York State J M* 1926 xxvi 819.

Because of many disastrous results from the intravenous use of tetrabromophthalein and tetraiodophenolphthalein, the authors set about to perfect the oral method. At present they have adopted the following technique.

The intestinal tract is thoroughly cleansed by the administration of a cathartic and an enema. At 6:30 p.m. a light meal is given. Beginning at 9:30 p.m., two 5 gr capsules of tetraiodophenolphthalein are given every fifteen minutes with a small glass of water until 40 gr. have been taken. The dye is given in plain gelatine capsules which are dipped into a solution of keratine to seal them air tight and covered with a coating to prevent them from being broken up in the stomach. These capsules are made up fresh for each patient.

The patient reports without breakfast at 9:30 a.m., twelve hours after the administration of the dye. Four hours later, at 1:30 p.m. the examination is repeated. A regular luncheon is then given and another examination is made one hour later. The following morning the final observation is made.

The authors state that this technique can be relied upon absolutely, and that attention must be centered on the interpretation. Non opaque stones are visualized as circular negative shadows. Mottling of the shadow indicates small stones but care must be taken to distinguish these from gas in the duodenum. Not all stones are visualized since calcium stones which show with the ordinary method of examination are overshadowed by the opaque bile. Stones may not show when they are overshadowed by the opaque bile in addition to the shadow cast by the thickened gall bladder wall. Deformity of the gall bladder can be demonstrated. Changes in the function of the gall bladder are indicated by the absence, persistence, faintness or late appearance of the shadow. The lack of sufficient opaque bile to cast a shadow may be due to impairment of the function of the liver. Faintness of the shadow is attributed to insufficient concentrating power of the gall bladder.

JOHN A WOLFER, M.D.

Graham E A, Cole W H, Copher G H and Kodama S. Some New Phases of the Physiology of the Biliary Tract. *Ann Surg* 1926, lxxvii, 343.

Richardson E P. Surgical Aspects of Certain Phases of Liver Function. *Ann Surg* 1926, lxxv, 35.

McGuire E R. Problems in Gall Bladder Surgery. *Ann Surg* 1926, lxxiv, 366.

Cave H W. Dangers Incident to Cholecystectomy. *Ann Surg* 1926, lxxiv, 371.

Deaver J B and Burden V G. Surgical Management of the Complications of Cholecystitis. *Ann Surg* 1926, lxxiv, 379.



- Bruce H A Association of Cholecystitis with Duodenal Ulcer *Ann Surg* 1926 lxxiv 387  
 Douglas J Strictures and Operative Injuries of the Bile Ducts *Ann Surg* 1926 lxxiv 392  
 Crile G W The Operative Management of Common Duct Stones *Ann Surg* 1926 lxxiv 411

GRAHAM COLF COTTER, and KODAMA state that the gall bladder has two known functions one of which is concerned with the regulation of pressure within the biliary tract and the other with the concentration of bile by the absorption of water. As the blood from the gall bladder empties into the portal vein it is possible that in addition the gall bladder forms some product required by the liver.

With regard to the manner in which the gall bladder empties itself the authors state that if contractures occur they are of little importance. They believe that the bile is siphoned from the cystic duct by the passage of bile down the hepatic or common duct.

The existence of a true sphincter of Oddi is questioned but a sphincter action produced by the tonus of the duodenum has been demonstrated. The bile is eventually drawn into the bowel by the milking action of the duodenum. Oleic acid or a meal of fatty food is more potent than magnesium sulphate in causing a discharge of bile from the gall bladder. In experiments on animals in which a rubber bag was substituted for the gall bladder it was found that the bag responded in the same manner as the organ with the exception of the absorptive processes.

For cholecystography phenoltetraiodophthaloin possesses many advantages over tetraiodophenol phthaloin.

RICHARDSON cites the work of Mann and McEach which has demonstrated a decrease in the blood sugar and urea and an increase in the blood uric acid following the removal of the liver. In hepatic disease the blood chemistry seems to be of more value in revealing the condition of the kidneys or secondary changes in metabolism than it is in revealing the condition of the liver itself.

The bile pigment is probably formed in the reticulo endothelial system from the destruction of hemoglobin. It is then excreted by the epithelial cells of the liver. The depth of jaundice depends upon the rate of red cell destruction the condition of the liver and the ability of the kidneys to excrete the pigment. The van den Bergh reaction and the icterus index are of value in revealing the degree of latent and clinical jaundice.

According to McVee jaundice may be caused by excessive hemolysis toxic or infectious action on the liver epithelium the administration of certain drugs or obstruction of the bile passages.

The clinical picture is considered of more value as evidence for or against operation than the van den Bergh reaction. The chief value of the phenol tetraiodophthaloin test lies in the fact that dye retention may occur in cases in which the serum bilirubin is within the normal limits.

McGUIRE states that the four most common causes of death in biliary surgery are long standing jaundice cardiovascular renal disease abscess around the cystic duct and carcinoma. The chief contributory causes are lung complications (including embolus) associated pancreatitis acute hepatitis liver stones and peritonitis. The importance of cardiac complications following operation on the gall bladder is emphasized. Embolic processes in the lung are not unusual.

In cases of gall bladder stones confined to the gall bladder McGuire regards cholecystectomy as the operation of choice when there are no unfavorable factors such as jaundice. When stones are present in the common duct and the gall bladder is contracted and not functioning cholecystectomy with common duct drainage is indicated because the gall bladder is useless for any subsequent procedures.

In cases of common duct stones with an apparently functioning gall bladder cholecystectomy with drainage of the common duct is a safe procedure if all stones are removed from the common duct. However complications are so frequent in these cases that probably in most instances cholecystostomy with drainage of the common duct is the operation of choice.

In cases of stones confined to the gall bladder and complicated by jaundice McGuire usually does a cholecystostomy.

In subacute pancreatitis due to biliary infection drainage is indicated. In the author's opinion the infection usually reaches the pancreas by the blood or lymphatic routes. In acute hemorrhagic pancreatitis ample drainage is important.

Carcinoma of the pancreas and ampulla should not be operated upon. Cholecystostomy is contra indicated when malignancy is found at operation. Either nothing should be done or some form of internal drainage should be established.

In acute hepatitis the following conditions have been found: interstitial hepatitis with jaundice of the liver parenchyma cholangitis with biliary cirrhosis and acute cholangitis of the smaller intra hepatic ducts.

CAVE reports that from January 1, 1910 to April 1, 1926 a period of sixteen years and three months, there were performed on the Second Surgical Division of the Roosevelt Hospital of New York 470 cholecystectomies and 103 cholecystostomies. The immediate operative mortality (death in the hospital) in these 573 cases was 6.08 per cent.

Of the 241 patients subsequently traced 209 had been subjected to cholecystectomy and thirty two to cholecystostomy.

Of the 209 who had been subjected to cholecystectomy 182 (86.1 per cent) reported that they were well without symptoms or further operations. Of the remaining twenty seven three had been operated upon elsewhere for stones in the common or hepatic ducts three for stricture of the common duct and twenty one complained of digestive disturbances or pain in the right upper quadrant of

the abdomen. No persistent biliary fistulae were reported.

Of the thirty two patients who had been subjected to cholecystostomy eighteen (56 per cent) had had subsequent operations. Eleven had had a cholecystectomy and six both a choledochotomy and cholecystectomy. One had a second cholecystostomy six months after the first drainage operation and a cholecystectomy four months later. Since the last operation which was performed nine years ago, he has had no abdominal discomfort of any kind.

The most frequent and troublesome complication after cholecystectomy is hemorrhage. This may be due to an anomalous or friable vessel injury to the portal vein or the slipping of a ligature after the operation due indirectly to violent vomiting. Of the thirty three deaths reported four were due to hemorrhage.

Injury to the bile ducts only occasionally causes an immediate complication. If this occurs a reconstruction operation may be performed at some future time.

Of the immediate deaths in the cases reviewed four were due to postoperative pneumonia and four to peritonitis.

Cave believes it is best to keep patients with acute gall bladder inflammation under observation for from twenty four to thirty six hours. If by the end of this time there is no abatement of the symptoms, cholecystostomy is the operation of choice.

Three of the immediate deaths in the cases reviewed occurred within forty hours with hyperpyrexia of 106, 107 and 107.2 degrees F respectively. In cases that end fatally within forty eight hours the cause of death is probably the absorption of toxins from chemically altered liver cells or infected bile.

The Rowntree Rosenthal dye test is of value in determining hepatic function and should be used before operation in all cases of disease of the biliary tract in order to determine whether a removal or drainage operation should be done. In the preoperative preparation the use of calcium as suggested by Walters, the forcing of fluids, a high carbohydrate diet and the administration of glucose by mouth are indicated.

DEAVER and BURDEN state that the surgical mortality of cholecystitis depends largely on the duration of the disease and its complications. The clinical symptoms and the pathological findings often vary. In acute cholecystitis, operation should be deferred until the acute attack has subsided if immediate intervention is not necessitated by perforation or suppuration. Gangrene and acute perforation of the gall bladder are rare. When the latter occurs a fistula between some portion of the bowel often results.

Calculation is usually the result of cholecystitis. To remove the pathological condition the gall bladder must be removed. In biliary obstruction the degree of jaundice is dependent upon the extent of the obstruction, the threshold value and the capacity

of the kidney to excrete pigment and the permeability of the blood vessels to pigment.

In cases of jaundice, surgical mortality is probably due more often to failure to establish the bile flow in the presence of hepatic and renal insufficiency than to the loss of blood from oozing. The dangers in obstructive jaundice are the pigment and bile salts in the blood, the tendency to bleed, and liver and kidney insufficiency. The aim in the preoperative preparation should be to combat and control these factors.

In most cases a diseased gall bladder and a stone in the common duct can be removed safely at one operation. The common duct should be drained with a T tube.

In acute pancreatitis any abscess or hematoma that may be present should be incised and drained. If there is no abscess or hematoma drainage should be placed down to the pancreas. In subacute pancreatitis the patient should be kept under observation and drainage established if a localized abscess forms. Chronic inflammation of the pancreas is usually secondary to inflammation of the biliary tract. Cholecystectomy should be performed to remove the focus of infection.

Stone in the common duct is considered a complication of cholecystitis since nearly all stones are formed in the gall bladder.

In any type of operation on the biliary tract extreme care should be taken that a stone or sand like material is not overlooked.

The classical syndrome of stone in the common duct consists in colic, jaundice, and chills. In some cases one or two of these symptoms may be absent. The stones should be removed through an incision in the common duct the duct explored with the finger or a scoop and a T tube inserted.

Deaver and Burden do not consider it advisable to delay operation after the diagnosis of stone in the common duct has been made.

The causes of recurrence of symptoms following operation may be grouped as follows:

1. Incomplete primary operation such as failure to remove the diseased gall bladder, the appendix, and a common duct stone, or to recognize and treat a peptic ulcer and chronic pancreatitis. Cholecystostomy may temporarily relieve the symptoms of cholecystitis but does not cure and by its mechanical effects may be the cause of new symptoms. Persistence of symptoms after gastro enterostomy for ulcer may be caused by cholecystitis. Removal of the appendix, even when it is not acutely diseased is a safeguard against future trouble.

2. Hepatitis and pancreatitis. These conditions may persist for several months after cholecystectomy. On several occasions drainage of the common duct in such cases has given good results.

3. Accidents of the operation, of which injury to the hepatic or common duct is the most serious and unless promptly recognized and treated may result in a stricture with jaundice or a complete biliary fistula.

4 Incorrect diagnosis both before and during operation. The surgeon must be trained in the art of diagnosis and in the recognition of pathological tissue.

BRUCE reports six cases of cholecystitis associated with duodenal ulcer. He mentions the similarity of symptoms and the fact that melena or hematemesis may occur from infection of the gall bladder as well as from ulcer. In the cases reported the prominent symptoms were those of gall bladder disease.

A thorough examination of the duodenum should be made in all operations for gall bladder disease.

DOUGLAS discusses the anatomical variations in the extrahepatic biliary system and some of the pathological conditions found. Twelve cases are reported. The various methods of repairing injury of the bile ducts are mentioned.

Injuries to the bile ducts may occur in a simple operation or may be due to pathological conditions rendering the operation difficult or to congenital abnormalities of the ducts or arteries. The most common causes are traction on the cystic duct lack of visualization or blind attempts to stop hemorrhage.

The site of the injury is usually at the point of union of the cystic and hepatic ducts or the main hepatic duct above this point or less commonly in the common duct.

The symptoms are those of biliary obstruction with or without cholangitis which at first is usually intermittent but later becomes permanent. More rarely a persistent biliary fistula is present.

The pathological condition present may show a short narrow stricture above which small stones, mucus or biliary detritus is often found. The ducts above the stricture are dilated and the liver is enlarged and soft or when attacks of cholangitis have persisted cirrhotic.

The method of repair must depend on the condition found. Recurrences of symptoms are reported after all methods. Examination of follow up reports appears to indicate that the best end results follow suture of the ducts. The next most favorable results follow hepaticoduodenostomy.

Recurrence of symptoms may occur after the patient has been apparently well for months or years and the symptoms may disappear after several months of recurrence.

In two cases reported the disappearance of late symptoms seemed to be influenced by the administration of bile salts.

CRILE considers the physiological reaction of the brain and liver to be in many ways similar.

After operations upon either of these organs there is a rapid loss of bodily energy consciousness fades slowly and in each case there is little if any medication which can influence the unfavorable course. In each the state of the blood pres-

sure and the circulation give but little clue to the gravity of the condition. The brain and the liver are alike highly sensitive to variations in temperature. Each is a powerful organ manifesting variations within it in a peculiarly dramatic way each is absolutely essential to life.

About the common duct there is a great sympathetic plexus called by Crile the abdominal brain. The breaking up of dense adhesions in the search for the common duct causes a generally bodily effect comparable to that produced by manipulation of the spinal cord or of the brain. Experimental trauma of the sympathetic nervous system—interference with the sympathetic nerve supply—produces cytological changes in the liver cells as well as in the brain cells. Strong emotional stimuli cause cytological changes in the cells of the liver. Blocking of the splanchnic nerve supply greatly reduces the systemic effects of manipulation of the viscera.

Clinical experience and experimental research make it clear that because of these facts operations upon the common duct require a wide regional block with novocain and when feasible a splanchnic block. Also of importance are a clear exposure, a sharp dissection and the use of a suction apparatus to remove bile or any oozing blood.

The best form of drainage about the common duct is the insertion in the right flank of a drain which terminates in Morrison's pouch. Sudden decompression of the common duct must be avoided.

Another factor of extreme importance is the maintenance of the normal temperature of the liver. This may be done in several ways. In Crile's opinion the most satisfactory method is diathermy.

JAMES A H MAGOUL M D

Corbett R S and Peirce C B. A Clinical Type of Cholelithiasis Resembling Renal Disease. Report of Two Cases. *Surg Gynec & Obst* 1926 vol 459.

The authors describe a type of cholelithiasis suggesting renal disease. While gall bladder symptoms are not infrequently present in such cases it is the renal symptoms which bring the patient to the physician. In the two cases reported the renal symptoms disappeared after the gall bladder was removed.

The demonstration of gall stones in the roentgenograms was facilitated by the use of tetra iodophenolphthalein not because of absorption by the stone but because of the contrast afforded by the background of opaque bile. These cases were characterized by the formation of large gall stones, a moderate degree of pathological change in the wall of the gall bladder and a very faint shadow of the viscus after the oral administration of the dye.

The authors are of the opinion that in both instances the cholecystitis with stones in the gall bladder was the true cause of the symptoms.

JOHN A WOLFER M D

# GYNECOLOGY

## UTERUS

**Masson J C** Acute Inversion of the Uterus *Surg Clin N Am* 19 6 vi 13 9

Acute inversion of the uterus is a rare complication in labor. In most of the reported cases the condition occurred in a primipara. The predisposing causes are too vigorous compression of the fundus after delivery of the child, traction on the cord, and relaxation of the uterus. Hemorrhage the most serious symptom may be accompanied or immediately followed by extreme shock and pain. The uterus cannot be palpated in the abdomen and a bleeding globular mass protrudes from the vulva.

The most important considerations in the treatment are (1) control of the hemorrhage by hot compresses to the protruding uterus by pressure and by the use of pituitrin (2) control of the shock by transfusion and routine measures and (3) immediate reduction if the patient's condition will permit it. If reduction cannot be accomplished through the vagina the abdomen should be opened and the inversion corrected at a later date according to the technique of Haultain or Dobbin.

**Whitehouse B and Shaw W F** The Causes and Treatment of Uterine Hemorrhage *Brit M J* 1926 vi 723

WHITEHOUSE believes that menstruation is the monthly abortion of the decidua of an unfertilized ovum. The menstrual discharge is the lochia of an unfertilized abortion. The pre-menstrual endometrium is the menstrual decidua and its development and life are dependent upon the corpus luteum. Menstrual abortion is initiated by the death of the unfertilized ovum and retrogression of the corpus luteum.

Pathological uterine hemorrhage falls into one of four clinical groups (1) epimenorrhoea (2) menorrhagia (3) menorrhagia (4) metrorrhagia. Epimenorrhoea is the clinical manifestation of hyperactivity of the sex complex. Menorrhagia is an incomplete unfertilized menstrual abortion. Menorrhagia is the result of uterine insufficiency which may be developmental, inflammatory or degenerative. The insufficiency may be associated with lesions in the metrium or the endometrium. Metrorrhagia is commonly the reflection of external influences upon the uterus. The accessory factors most commonly associated with irregular uterine bleeding are functional hyperthyroidism and hypersensibility of the sympathetic nervous system. Estimation of the blood tolerance of sugar and of the basal metabolic rate provides important data in the investigation of uterine hemorrhage at periods of unstable equilibrium, especially puberty and the menopause.

SHAW states that in the normal uterus a definite balance is always maintained between the musculature and the flow of blood through the vessels. This flow can be regulated by contraction of the muscle fibers.

In chronic metritis the muscular tissue is diminished and is separated from the vessels upon which it must act by a mass of inert fibrous tissue. Hence excessive hemorrhage results.

In subinvolution the uterus remains large and bulky because the muscular tissue is not absorbed and in addition the quantity of fibrous and elastic tissue especially the latter is increased. It is the collection of this tissue in large quantities around the blood vessels which gives the characteristic microscopic appearance in subinvolution and accounts for the chief symptom of hemorrhage. The muscular tissue of the uterus is rendered unable satisfactorily to control the flow through the new vessels when a fixed inert mass of elastic tissue is placed between it and the vessel walls. Subinvolution and chronic metritis frequently occur in the same uterus.

In hypertrophy of the uterus the endometrium and the uterine walls are greatly thickened, but there is no alteration in the distribution or amount of the muscular elastic or fibrous tissue. Patients with this condition consult the gynecologist in middle life with a history of hemorrhage and dysmenorrhea extending over many years. The symptoms are caused by the changes in the endometrium, but the thickening of the wall is due merely to overwork.

ROLAND S CROFT M.D.

**Pemberton F A** The Relation Between the Treatment of Cancer of the Cervix and the Cell Type *Am J Obst & Gynec* 1926 vii 536

The proportion between the three cell types in squamous cancer of the cervix is about the same in the different clinical stages of the disease.

In increasing order of malignancy the different cell types are the spinal, the adenocarcinoma, the transitional, and the fat spindle.

The type of cell does not indicate whether operation or radium is the better treatment.

The cases having more stroma than cancer tissue respond more favorably to either kind of treatment than those with more cancer tissue than stroma.

In the discussion of this report, CULBERTSON stated that in his opinion we are not justified in giving a prognosis based on the cell type of uterine carcinoma.

NOVAK said that there are certain cancers which are definitely of the spinal cell type and others which are just as definitely of the fat spinal cell type but many cases occur in which the cell type would be differently interpreted by different observers. In

spte of these drawbacks however some valuable information seems to have been derived from the study of the cells particularly the fact that in the cervix contrary to what might be expected the spinal cell group possesses a definitely lower grade of malignancy than the basal type

HEALY stated that 88 per cent of his cases belonged to what might be called the transitional cell or rather favorable group 18 per cent of these were absolutely favorable that is of the adult type of cell the spindle cell type to which PEMBERTON refers, 10 per cent were of the mixed transitional and spindle cell or adult type resembling more closely the non malignant than the highly malignant type of cell and the remaining 12 per cent were of the highly malignant undifferentiated embryonal cell type The treatment of cervical cancer cannot be based in any way upon the histological findings All that is gained from these is a point of view with regard to the prognosis

KEENE stated that he is unable to attach any value to the predominating cell as a prognostic index in his clinic

WARD is of the same opinion as Keene

SPALDING stated that the unripe cancers of the cervix seem to be the most malignant and have the most rapid growth when the majority are first seen they have extended to the parametrium or vaginal walls However such cancers react better to radium treatment Spalding's cases of unripe tumors with disease limited to the cervix have been cured The ripe tumors although slower in growth and less malignant seem more resistant to radium in fact it seems as if their growth is sometimes accelerated by radium treatment

E L CORNELL M D

#### ADNEXAL AND PERIUTERINE CONDITIONS

Whitehouse B The Influence of the Corpus Luteum upon Menstruation *J Obst & Gynec Brit Emp* 1926 LXIII 380

It is evident from the author's observations that removal of the corpus luteum and therefore presumably also the degeneration of this structure is followed by necrosis of the superficial layer of the endometrium with extensive extravasation of blood into its tissues Necrosis of the fully developed non-conceptual decidua is associated with the clinical phenomena generally known as menstruation It follows that this function is to be regarded as an infertile abortion and the voided products of necrosis as the menstrual lochia In the production of this abortion whether it be of the partly mature decidua or of the developing organ the corpus luteum is a dominant factor

Ovulation is apparently independent of the corpus luteum although the actual menstrual period is intimately associated with the loss of the lutein hormone

The author's observations confirm Shaw's contention that the process of follicle ripening is period

ical and responsible for the rhythm of ovarian activity Follicle rupture however, is not influenced by any hormone elaborated by the preceding corpus luteum

On three recent laparotomies for chronic appendicitis in cases in which the pelvic organs were normal the opportunity was taken to aspirate the liquor folliculi from mature follicles and inject the fluid into the blood stream by way of the median basilic vein The experiments took place during the mid point of the sexual cycle The date of the subsequent menstruation was not influenced by the procedure Amounts varying from  $\frac{1}{4}$  to 1 ccm of liquor folliculi were injected intravenously without producing any clinical effect whatsoever, either general or local such as hyperæmia increased uterine secretion the production of uterine hæmorrhage or alterations in the blood pressure

It was concluded therefore that the liquor folliculi in the human species is inert insofar as any influence upon the production of æstrus of the menstrual cycle is concerned In this respect it appears to differ from the follicular secretion of certain lower animals The author summarizes his conclusions as follows

1 Excision or degeneration of the corpus luteum results in necrosis of the endometrium

2 Ovulation is not influenced by the corpus luteum but is an index of rhythmic ovarian activity

3 The liquor folliculi in the human species has no specific function in the sex cycle

4 Menstruation is the monthly abortion of the developing decidua of an unfertilized ovum and the menstrual discharge is the lochia of this abortion The pre menstrual endometrium is the menstrual decidua and is merely a stage in the development of the complete decidua of pregnancy The premenstrual dilatation of the uterine glands is an artefact produced by the retention of secretion due to constriction of the ducts by the stroma and later, by extravasated blood

5 The development and life of the menstrual decidua are dependent upon a hormone elaborated by the corpus luteum

6 Degeneration of the corpus luteum is normally the result of a negative phase produced by the death of the ovum with its corona radiata and the absorption of its products The cells of the corona radiata are morphologically identical with the large cells of the corpus luteum

7 The life of the unfertilized human ovum after rupture of the follicle is approximately fourteen days

8 The rhythmic cycle of events in the human female may be represented as follows thirteenth day rupture of the follicle nineteenth day development of the corpus luteum completed twentieth to twenty seventh day, development of endometrium into menstrual decidua with differentiation into stratum compactum and stratum spongiosum, twenty seventh day death of the unfertilized ovum and the production of a negative

phase" by the dead cells of the corona radiata, twenty seventh to twenty eighth day, beginning degeneration of the corpus luteum followed by necrosis of the menstrual decidua first to fourth day, continued necrosis of the decidua and removal of the products of abortion by uterine contraction stimulated by pituitary activity, and fifth to twelfth day, regeneration of the endometrium to complete functional activity. CARL H. DAVIS M.D.

McCreedy R. L. and Ryan E. J. Roentgenography of the Cavity of the Uterus and Fallopian Tubes with Special Reference to Its Value in Cases of Sterility. *Am. J. Roentgenol.* 1926 xvi 321

The authors briefly review the development of the roentgenographic study of the female generative organs with the aid of contrast media such as lipiodol. The technique used is described briefly and the difficulties of interpreting the roentgenographic image are discussed. The value of stereoscopic exposures and the necessity of examinations made at varying intervals are emphasized. The article includes numerous roentgenograms illustrating apparent discrepancies revealed by examinations made at different times, and an attempt is made to explain them. These cases are exceptional however and the normal patency of tubes is ordinarily demonstrated easily.

One of the chief advantages of the method in sterility due to occlusion of the tubes is that it reveals the point of occlusion, which is a very important factor in determining the indication for operation. In occlusion at the isthmus the prospect of improvement after operation is very poor. The further the occlusion is situated from the uterus, the better the chances for the success of operation.

The authors believe that the results of roentgenography of the tubes can be thoroughly relied upon if the examination is made properly. It has been shown by many cases that not only the diagnosis of patency, but also the point of occlusion of a tube can be accurately demonstrated. As practical examples of the efficiency of the test, three cases of sterility are reported briefly.

ADOLPH HARTUNG M.D.

#### EXTERNAL GENITALIA

Sherman E. M. and Norton S. L. Further Research in the Problem of Vulvovaginitis in Children. II. Serological Studies. *J. Urol.* 1926 xvi 279

The authors state that by the use of the five preliminary tests for the selection of a suitable complement before the sera from guinea pigs are pooled the complement fixation test for gonorrhea is rendered more reliable. In the study reported, only 70 per cent of the animals tested could be used in the serological tests.

Of the 106 parallel tests with a polyvalent antigen made from ten Torrey strains and a bivalent antigen

made from two Torrey strains, 150 (76.5 per cent) gave identical results, thirty-eight (16.4 per cent) showed a stronger reaction with the polyvalent antigen, and eight (4.08 per cent) showed a stronger reaction with the bivalent antigen.

In the parallel tests with active and inactive sera of 105 blood specimens a larger percentage of stronger reactions were obtained with the active sera. However this was too small a series of tests from which to obtain conclusive deductions. An experimental study of active and inactive sera would be of value in the complement fixation test for gonorrhea in which the antibody response is generally weak.

A Kaliski Breuer control test on all sera gave no evidence of false negatives which could be ascribed to the presence of natural antishape amboceptor in the patient's serum.

The three courses of provocative vaccine administered did not significantly affect the complement fixation tests, the clinical signs, or the bacteriological findings.

Children from 4 to 5 years of age with similar clinical pictures gave weakly positive complement fixation reactions during the period of study. Two children aged 9 and 10 years who gave a weakly positive reaction showed only the latent clinical stage. It was observed that older children with only latent signs gave a negative or only weakly positive serological response.

Children from 1 to 3 years of age in the chronic stage with occasional exacerbations or in the stage with no exacerbations gave negative complement fixation reactions. Two children in the negative group had reached the age of puberty and had not shown any signs of exacerbation, remaining clinically in the chronic stage while under observation. It is possible that these two children were examples of a spontaneous cure at puberty, a belief held by many observers and frequently expressed in the literature. It has been observed that an exacerbation with increased clinical signs in children over 5 years of age is invariably preceded accompanied or followed by a stronger serological response. In babies and very young children an exacerbation with accompanying increased clinical signs has not produced any increase in the serological response as demonstrated by the complement fixation test. Therefore it seems that age as well as involvement is an important factor in the production of the gonococcus antibody.

Of the blood specimens obtained for controls from adults with positive histories and clinical signs, 68.8 per cent gave positive complement fixation reactions and 31.2 per cent gave negative reactions. Of the blood specimens from normal adults, 91.6 per cent gave negative reactions. One evidence of non-specific fixability occurred: four bleedings from one normal adult giving weakly positive reactions with a polyvalent antigen (serum not anticomplementary) and negative results with a bivalent antigen.

None of the seventeen vulvovaginitis strains isolated to date agglutinated with a polyvalent immune serum in dilutions of 1:100 and above.

In five cases the Wassermann reaction was positive.  
 ROLAND S. CROW, M.D.

### MISCELLANEOUS

**Huggins R. R.** Ligation of Pelvic Veins in Thrombophlebitis. *Am J Obst & Gynec* 1926 xii 562

The diagnosis of thrombophlebitis is not difficult. Even when there is doubt in exploratory laparotomy in no way interferes with the progress of the case. If a mistake is made, the patient will survive and no harm has been done. It is not unusual to discover a small abscess in the uterus or broad ligament which alone will justify the exploration. Such a lesion may be accompanied by chill and a temperature similar to that of phlebitis.

The veins should be ligated through a transperitoneal incision. They need not be excised. If possible, the ligature should be placed distal to the point of infection. If this is impossible, a ligation of the vein somewhat short of the extreme extension of the intection will probably be beneficial because it will interrupt the blood current and thereby arrest the spread of the infection. The author has not hesitated to ligate both ovarian veins and in one instance ligated the vena cava. With the exception of a moderate swelling of the legs which disappears, there are few apparent symptoms from such a procedure. This is true also of ligation of both of the ovarian veins and the common iliac. In the future the author will ligate the common iliac in preference to the internal iliac as this procedure is easier and can be done more quickly.

The mortality in the author's entire series of twelve cases, four of which were reported in 1912, was 33.3 per cent. Eight cases are reported in detail.

In the discussion of this report Humpstone stated that he thinks the treatment illogical because of the multiplicity of the veins out of the pelvis. The greatest advance in the management of the condition in the last ten years is its prophylactic treatment by primary repair of all cervical injuries. Humpstone has had considerable success with small repeated transfusions in such cases.

BREITAUER believes it is not easy to determine which cases should be operated upon.

ETERSON thinks Huggins' suggestion of tying off the pelvic veins for puerperal infection is based upon a wrong conception of the pathology. The main argument against the procedure is that the condition is a blood stream infection when the damage has been done. It would therefore appear that the tying of veins would do very little if any good and probably would harm a patient who is already badly handicapped by a severe infection.

SCHARTZ stated that ligation is indicated only in cases which are definitely due to anaerobic streptococci and not due to the ordinary pyogenic organ-

isms and should be done in such cases only when the lung lesions make their appearance.

POLAK reported that when he has operated in cases with the indications given by Huggins the mortality was higher than in the cases in which he did not operate.

IFFER stated that multiple incisions or any incision where there is no pus may change a condition which is taken care of by the lymphatics into a blood stream infection.

MILLER believes that the operation described has a definite field but that it is a very limited one. He cannot agree with Huggins that it should be used routinely in septic thrombophlebitis in the early stages.  
 I. I. CORNELL, M.D.

**Sampson J. A.** Endometriosis of the Sac of a Right Inguinal Hernia Associated with a Pelvic Peritoneal Endometriosis and an Endometrial Cyst of the Ovary. *Am J Obst & Gynec* 1926 xii 459

**Novak E.** The Significance of Uterine Mucosa in the Fallopian Tube with a Discussion of the Origin of Aberrant Endometrium. *Am J Obst & Gynec* 1926 xii 484

**Davis C. H. and Cron, R. S.** A Contribution to the Study of Endometriosis. *Am J Obst & Gynec* 1926 xii 526

SAMPSON is of the opinion that pelvic peritoneal endometriosis is usually due to the escape of menstrual blood into the peritoneal cavity with a subsequent local reaction. He states that menstrual blood at times passes into the peritoneal cavity as a back flow from the uterus through the tubes from the tubal mucosa itself from the perforation of an endometrial hematoma of the ovary and possibly from endometrial tissue on peritoneal surfaces. Menstrual blood like other irritants causes granulation and scar tissue formation, adhesions and peritoneal inclusions. Endometrial tissue which is often found on the surface of these peritoneal lesions or embedded within can be explained only by the assumption that fragments of uterine mucosa in the menstrual blood became implanted at these points or the peritoneum was in some way converted into endometrial tissue by the specific stimulation of some ingredient of this blood.

The experimental work of Jacobson demonstrates that similar peritoneal lesions may be produced in rabbits and monkeys by scattering bits of uterine mucosa in the peritoneal cavity and clinical observations at least suggest that endometrial tissue may be successfully transplanted in human beings. The local peritoneal reaction toward the menstrual blood creates conditions favoring the retention and engrafting of any living tissue contained in the blood just as similar reactions make possible the implantation of cancer escaping into the peritoneal cavity.

These implantation like lesions occur most frequently in the dependent portion of the pelvis and in its normal peritoneal pockets and folds. It is logical to assume that they might occur in a hernal

sac just as tuberculosis and carcinosis have occurred in hernial sacs in cases of peritoneal tuberculosis and carcinosis

Sampson reports a case of pelvic peritoneal endometriosis associated with an endometrial cyst of the ovary and inguinal hernia. Peritoneal lesions containing endometrial tissue were found in both the anterior and the posterior cul de sac and in the walls of the hernial sac. The lumen of the hernial sac had been nearly completely occluded by the endometriosis. Observations made at operation and in the laboratory study of the tissue removed indicate that the pelvic peritoneal lesions and those of the hernial sac had a common origin. From the material escaping into these cavities and from the local reaction, Sampson concluded that the substance responsible was menstrual blood.

NOVAK reports a histological study of many hundreds of fallopian tubes with particular reference to their contents. In seven tubes particles of uterine mucosa were demonstrated lying free in the lumen and in one tube which contained a pregnancy in its outer third, there was found between this point and the uterus a mass of cells which resembled trophoblastic or possibly decidua cells. The nature of endometrial particles when these were discovered, was indisputable. None of the women from whom these endometrium containing tubes were removed was menstruating at the time. Five of the seven tubes containing endometrium were removed on the twenty sixth, fourteenth, eighth, tenth, and ninth days of the cycle respectively. In none of these cases did the endometrium in the tubes show the characteristic picture of endometrium thrown off at menstruation.

In at least five of the cases the particles of free endometrium were so large that it seemed almost impossible for them to have entered the tiny uterine orifice of the tube. The suggestion that they were probably moving toward rather than away from the uterus is strengthened by the finding of definite endometrial tissue in the ovary in at least two of the five cases. The failure to find it in the others may have been due in several instances to the fact that little or no ovarian tissue was removed at the operation and in one case to the difficulty of finding small islands of ovarian endometrioma in a specimen which had been kept in a fixing solution for a considerable time.

Thirteen observations made in the course of operations upon women who were menstruating and whose tubes were open failed to show regurgitation of menstrual blood in a single case. Histological examination of tubes removed during menstruation characteristically showed little or no blood. Moreover, no blood has apparently been observed in the pelvis in the thousands of women operated upon by thousands of surgeons immediately after menstruation although if any of the blood had escaped into the pelvis it could scarcely have been resorbed in such a brief space of time. It seems logical to conclude therefore that while menstrual regurgitation

through the tube is possible, it is exceedingly infrequent too infrequent to explain such a very common lesion as pelvic endometriosis.

NOVAK believes that endometrial tissue cannot undergo retrograde transportation into the tube. He states that if it takes the smaller ovum at least a number of days to pass down the tube even with the current at its back it would probably take much longer for tissue to pass upward against this stream assuming that this were possible. Moreover it appears incredible that degenerative tissue could thread itself into the tubal orifice, make its way upward, and after probably many days still have sufficient vitality to grow where it falls. This seems especially impossible because of the very rapid autolytic and degenerative changes that occur in the tissue cast off during menstruation.

One source of aberrant endometrium may be ectopic differentiation of coelomic epithelium. This is suggested by the fact that in ovarian endometriosis there may be found all of the stages of the differentiation through which the genital epithelium normally passes, e.g., simple endometrium like epithelium, with few or no invaginations and little or no stroma, more typical endometrium with or without menstrual reactivity, mucosa resembling that of the tube, etc. The mere presence of hemorrhage can not be taken as evidence of menstrual participation of epithelium.

The evidence indicates that if implantation plays a part in the dissemination of the endometrium as it well may, it is the ovary from which the seed is primarily dropped rather than the tube. All reasons cited by Sampson in favor of the tubal origin of implants speak just as forcibly and indeed much more forcibly for the ovary as a primary source. Endometrial tissue from the ovary would theoretically possess much greater vitality than that from the menstruating uterus for it could readily break off from the surface or be cast out in the rupture of hematomata without the influence of menstruation.

DAVIS and CRON report nine cases of endometriosis—one in which the endometrial implants were probably due to transuterine inflation, one of an endometrial implant involving the posterior vault of the vagina, one of endometrial implants on the uterus and five of chocolate cysts of one or both ovaries.

The menstrual histories show that in an appreciable number of these cases the menstrual periods had been painful from the first. In the determination of the etiology of the condition this fact may be of significance. It may eventually be shown that certain ovaries contain rather large embryonic inclusions of endometrial tissue which cause pain from the first period and eventually result in chocolate cysts and it is possible that the spill from such cysts might lead to the development of secondary growths in the cul de sac or on the uterus. It is possible also that the pain of the first period may be due to a very tight internal os, and that this associated with a congenital retrodisplacement of the uterus results



in the escape of endometrial tissue through the tube and subsequent growth in a recent corpus luteum with the later formation of chocolate cysts

In the discussion of these reports GOODALL said that endometriosis is a clinical entity which has been established beyond any doubt. It will never be possible from the study of the human anatomy to say that the overflow from the uterus and tubes is or is not the cause or that all of the tissues of this nature arise from pre-existing endometrial tissue in the ovary but a solution of this problem may come from a study of comparative physiology in lower animals in which there is no menstrual flow. Goodall is inclined to attribute the condition to ectopic embryonal tissue of an endometrial nature in the ovary.

HEANEY reported six cases of endometriosis. In three in which the abdominal wall was involved the involvement followed a laparotomy. In one case a case of early pregnancy examination revealed an adenoma of the rectovaginal septum which looked like a carcinoma and four perforations in the vaginal vault from which hung polypi.

DANFORTH reported that on at least one occasion at operation performed during the menstrual period he saw a small amount of blood come from the tube. Chocolate cysts seem always to be found in association with patent tubes. It therefore has been easier for him to accept the transplantation theory of endometrio than the metaplastic theory.

SCHWARTZ stated that in the study of endometrial tissue in the ovary the implantation theory has impressed him for two reasons, first, because the surface of the ovary which is in close proximity to the fimbriated end of the tube is the most common site of the lesion, and second because in its earliest stages in the ovary the lesion is always superficially placed.

CURTIS reported that for a year and a half he has been operating whenever possible at the time of menstruation. In three cases menstrual blood was observed coming from the tubes. During the last six months he has encountered approximately fifteen cases of endometrial implants. In nearly all there was a retrodisplacement of the uterus and in every instance the fimbriated ends of the tubes were patent.

F. L. CORNFELL, M.D.

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Thomson C J The Causation of Still Birth and Neonatal Death *J Obst & Gynec Brit Emp* 1926 xxxiii 390

In 100 cases of still birth and neonatal death reviewed by Thomson the primary causes of death were as follows

Maternal conditions	
Eclampsia and albuminuria of pregnancy	6
Syphilis	15
Acute maternal diseases	5
Chronic maternal diseases	5
Hæmorrhage of pregnancy and parturition	6
Complications of labor	20
Unclassified maternal states	2

Fetal conditions	
Deformities and congenital defects	11
Idiopathic fetal diseases	7
Prematurity	6
Postmaturity	3
Pulmonary lesions	9
Visceral hæmorrhage	1

Placental conditions	
Extensive red or white infarction	3
Retroplacental hæmatoma	1
Cause not found	3

In the twenty eight cases of macerated still born infants the causes of death were

Maternal conditions	
Toxæmias of pregnancy	
Syphilis	10
Acute and chronic maternal diseases	3
Unclassified maternal states	1
Fetal conditions	
Fetal deformity and idiopathic disease	3
Prematurity	1
Placental conditions	
Placental insufficiency	3
Cause not found	3

From these figures it is evident that syphilis accounted for over one third of the deaths in the cases of macerated still born infants

In the forty six cases of still born infants without maceration the causes of death were

Maternal conditions	
Toxæmias of pregnancy	3
Syphilis	
Acute maternal diseases	1
Unclassified maternal states	1
Hæmorrhage of pregnancy and parturition	1
Complications of labor	18
Fetal conditions	
Deformities	8
Postmaturity	1
Pulmonary conditions	3
Visceral hæmorrhage	1

Placental conditions	
Placental insufficiency	1
Cause not found	

Half of the deaths in this group were due to the complications of labor

In the twenty six cases of neonatal deaths, the causes were the following

Maternal conditions	
Toxæmias of pregnancy	3
Syphilis	3
Acute maternal diseases	1
Hæmorrhage of pregnancy and parturition	1
Complications of labor	2

Fetal conditions	
Deformities and defects	2
Postmaturity	1
Prematurity <i>per se</i>	5
Pulmonary lesions	6

Placental conditions	
Placental insufficiency (causing prematurity)	2

Pulmonary lesions and prematurity *per se* were therefore responsible for nearly half of the deaths in these cases

The best results from preventive treatment are to be expected in the toxæmia and syphilis groups

CARL H DAVIS M D

Eden T W The Indications for the Induction of Abortion *Brit M J* 1926 ii 237

McIlroy A L Aspects to Be Considered for the Termination of Pregnancy Before Viability of the Child *Brit M J* 1926 ii 240

Barris J D Slow and Rapid Methods of Induction of Abortion *Brit M J* 1926 ii 241

Price F W Cardiac Indications for Termination of Pregnancy Before Viability of the Child *Brit M J* 1926 ii 242

Cole R H The Plea of Insanity for the Termination of Pregnancy Before Viability of the Child *Brit M J* 1926 ii 244

Evers H H The Ethical Aspect of Termination of Pregnancy Before Viability of the Child *Brit M J* 1926 ii 245

EDEN calls attention to the fact that the medical profession has always recognized that its members should not make themselves responsible for the termination of pregnancy unless there are good reasons for believing that completion of the pregnancy would endanger the mother's life or prejudice her future health. It has never been possible and probably never will be possible to lay down strict rules as to the conditions under which abortion may be or should be induced. If it were possible these rules would need constant revision to bring them into line with progress in the management of disease. It is therefore a matter of practical interest for us to determine from time to time the extent

to which we are agreed upon the conditions which may fairly be regarded as indications for the induction of abortion.

**Tuberculosis** There seems to be no escape from the conclusion that on the whole pregnancy is a definite risk to the tuberculous mother, and that it is not to the advantage of the community for children to be born with a risk of tuberculosis seven times greater than that in other children. These considerations are very powerful arguments for the termination of pregnancy in women with active tuberculosis.

**Nephritis** In women suffering from chronic nephritis pregnancy is always attended by certain very definite risks. There may be a complete breakdown of the renal function during pregnancy leading to uræmic convulsions or an intercurrent attack of acute nephritis may supervene. If these complications occur and are survived the working capacity of the damaged organs will be permanently reduced. In a relatively high percentage of cases of chronic nephritis accidental hæmorrhage especially of the toxæmic form which is associated with interstitial hæmorrhage and necrosis of the uterine muscle. Moreover in addition to the maternal risks the fetal risks are very heavy probably not more than 60 per cent of the children survive many of them dying from prematurity and the effects of transplacental intoxication.

A woman with chronic interstitial nephritis of the azotæmic type may not be allowed to continue her first pregnancy provided she is kept under careful supervision. If a serious renal breakdown with uræmic manifestations occurs in this pregnancy early abortion should be induced in subsequent pregnancies. In the case of any woman with chronic nephritis the occurrence in early pregnancy of albuminuria and oedema of the renal type justifies if it does not actually require the induction of abortion.

**Bacillus coli infection of the urinary tract** *Bacillus coli* infection of the urinary tract is its acute form which is not uncommon does not as a rule lead to serious developments during pregnancy although it is sometimes the cause of an acute fever during the early puerperium which may suggest the onset of puerperal sepsis. Eden saw one case recently in which abortion was necessary.

**Diabetes mellitus** Although in the past diabetes mellitus has been regarded as one of the gravest intercurrent diseases in pregnancy its risks have been very greatly reduced by treatment with insulin. Simple glycosuria is always amenable to dietetic treatment and never constitutes an indication for abortion.

**Valvular disease of the heart** Valvular disease of the heart seldom calls for the induction of abortion. As a rule a young woman with a well compensated valvular lesion will pass through one or possibly two pregnancies without serious inconvenience. Repeated pregnancies especially if they follow one another quickly undoubtedly damage the heart and reduce the patient's expectation of life. The

nature of the valvular lesion is of little importance the chief factor is the state of the cardiac muscle. It is only when signs of failure occur that the condition becomes serious.

**Mental conditions** In several cases Eden terminated pregnancy on the advice of a psychiatric physician because the patient had had a previous attack of puerperal insanity or was what is called a borderline case and had an unfavorable family history. All of the circumstances of the case should be reviewed by the general practitioner, the psychiatric physician and the obstetrical surgeon before abortion is decided upon.

**Chorea** Chorea is a not very uncommon complication of pregnancy but is usually amenable to complete rest in bed in a quiet room careful feeding and the administration of arsenic. In severe cases with pyrexia, however the termination of pregnancy may be necessary. In all others however severe the clonic spasm the induction of abortion need not be considered.

**Toxæmic vomiting** Toxæmic vomiting sometimes proves to be incurable by medical means and must then be arrested by termination of the pregnancy. In London, cases requiring the induction of abortion are extremely rare.

**Vesicular mole** Vesicular mole is an invariable indication for the induction of abortion. As a rule however an exact diagnosis cannot be made until after considerable hæmorrhage has occurred the internal os is open and the finger can detect the vesicular contents of the uterus.

**Retention of dead fetus** The retention of a dead early fetus in the uterus is usually diagnosed easily after the elapse of an interval of time sufficient to allow shrinkage of the uterus. In such cases the castor oil and quinine method is usually effective.

**Bleeding** The obstetrician should never be in a hurry to interfere with a threatened abortion because it is attended at the onset by severe bleeding. Persistence of bleeding is of more serious import for the life of the ovum than an initial severe hæmorrhage.

McILROY emphasizes that each case must be treated according to its particular requirements. The obstetrician should advise intervention only after he has consulted with a physician or a clinical pathologist. The induction of abortion is not to be regarded as a substitute for efficient treatment otherwise.

No social or economic interests apart from the medical needs of the case should be taken into account. The obstetrician should not be influenced by any likelihood of defect in the character of the offspring. If completion of the gestation is undesirable for medical reasons the patient should be urged to avoid subsequent pregnancies. If this course is impossible sterilization is to be considered. In some cases sterilization is the only course to be adopted.

In discussing methods of inducing abortion McILROY states that the slow method is to be preferred,

especially in cases of severe wasting disease such as phthisis in which hæmorrhage has a harmful effect upon the patient's recovery. Abortion can be induced successfully and without sepsis by tents. The dilatation of the cervix with Hegar's dilators and the introduction of a gauze and glycerin drain causes the uterus to empty its contents with little or no hæmorrhage. It must be remembered however that the stimulation of the uterus to contract and expel its contents is not always easy. In some cases a small rubber tube or a large catheter inserted into the uterus acts satisfactorily. In cases in which the fetus is palpable, induction may be brought about by passing the rubber tube or by rupturing the membranes and pulling down a leg.

Because of the risk of hæmorrhage and laceration in a patient already devitalized by disease the rapid method of clearing out the ovum under anaesthesia as is done in cases of incomplete abortion, is not advisable except in very early pregnancy.

BARRIS states that before the end of the third month of gestation the uterus can be evacuated readily by the rapid method because, at this stage the head of the fetus is small and easily collapsible and therefore not much dilatation of the cervical canal is necessary. Moreover the uterine cavity is not too large for the finger to be able to explore its walls completely and separate the ovum from its attachments.

After the third month of pregnancy the evacuation of the uterus is far more difficult as the fetal head is both larger and harder. In the rare instances in which rapid evacuation of the uterus is necessary after the third month of gestation it is far safer after having dilated the cervix as much as possible to incise the anterior fornix transversely, strip up the bladder from the front of the cervix, and then divide the anterior lip of the cervix longitudinally so as to expose the uterine cavity, puncture the membranes, and remove the fetus by grasping a leg. This operation of vaginal hysterotomy makes it possible to empty the uterus completely with no risk of lacerating the maternal tissues and is to be preferred to an abdominal caesarean section.

The slower methods are usually indicated also after the third month. Of these the best consists in the introduction of a small hydrostatic bag through the cervical canal after dilatation of the canal by a laminaria tent or metal dilators.

In cases of vesicular mole the evacuation of the uterus by abdominal caesarean section has been done with very satisfactory results.

PRICE emphasizes that the essential cause of cardiac failure lies in the heart muscle. This being the case the relation to the myocardium of chronic valvular disease and disturbances of the cardiac mechanism can be readily understood.

In a case of chronic valvular disease it is of the utmost importance to ascertain whether with the valvular lesion there are coincident changes in the myocardium or blood vessels or both, and if so their degree.

In the attempt to determine the prognosis in a given case of chronic valvular disease, the nature and degree of the lesion, its mode of origin, the degree of any existing cardiac failure, the existence of complications, and the risk of sudden death must be considered. It is necessary to determine the extent to which the character of the pulse and blood pressure have been changed and the size of the heart. In cases of aortic incompetence it is necessary to determine the pulse pressure, and in cases of mitral stenosis the length of the presystolic murmur and the presence and length of a diastolic murmur.

Whenever indications of cardiac failure are noted during pregnancy the obstetrician must consider the degree of the cardiac failure, the stage of the pregnancy at which it supervened, the immediate cause of the attack, and the response of the condition to treatment.

In cases of the first degree of cardiac failure, it is probable whatever the stage of the pregnancy, that the patient will be able to proceed to full term without risk to life. In cardiac failure of the second degree occurring during the first half of pregnancy—especially during the first three months and without some temporary cause—it is unlikely that the patient will be able to proceed to full term, but efforts should be made to allow her to do so if possible. If cardiac failure of the second degree occurs in the second half of pregnancy it is probable that the patient will proceed to full term. In either case, rest is imperative possibly for several months.

If severe cardiac failure occurs in the first half of pregnancy it is exceedingly improbable that the patient will be able to proceed to full term, but even in such cases it is surprising how often the outcome is favorable if the patient is able and willing to rest in bed for several months. If severe cardiac failure occurs in the second half of pregnancy the pregnancy should be allowed to proceed to term if possible.

If extreme cardiac failure occurs at any stage of pregnancy, the pregnancy should undoubtedly be terminated.

Except in extreme cardiac failure, it should be accepted that, as a general rule, the pregnancy should not be terminated until a reasonable period of rest and other therapeutic measures have been tried. If in cases of cardiac failure of the second or third degree proper treatment carried out for a reasonable period is not attended by at least a certain amount of improvement or if a relapse occurs termination of the pregnancy should be considered more favorably, especially in cases of mitral stenosis.

In any case in which it has been decided to terminate pregnancy an attempt should be made first to treat the cardiac failure in the hope of affording a better chance of a favorable result from the induction of abortion or premature labor.

COLE states that insanity during pregnancy is a somewhat rare condition, constituting less than 1 per cent of the total incidence of insanity in women. While mental disorders of a mild type, such as subacute depression, morbid yearnings, and transient

perversions of one kind or another are not uncommon they pass over into actual insanity in only exceptional cases

If insanity develops in the latter months of pregnancy it usually persists in recoverable cases for some time after the birth of the child whether the patient is delivered prematurely or not

Unmarried girls who become pregnant sometimes seek termination of the pregnancy to alleviate their mental distress in ignorance of the law governing the matter Cole has seen no such case in which operative intervention would have been justified

In phobic cases of the obsessional group in which as the result after consultation the obstetrician believes that the morbid fear of death as the outcome of the pregnancy is so overpowering as to endanger the patient's life operative intervention may be indicated

With regard to cases in which previous insanity has occurred especially if it occurred after labor and in borderline cases in which there is an unfavorable family history Cole feels obliged unless there are indications presented by the patient's bodily health to dissent from the view expressed by Eilen that labor should be induced before the child is viable He regards it as doubtful whether the mental disorder would be less liable to occur following premature intervention than after the seventh month or at full term

Cases have been known in which an insane husband home on leave from an institution has caused his wife to become pregnant and the wife has become distracted at the prospect of bearing a child who she thinks may be mentally defective The fear is a veritable obsession Cole believes that in such cases there are quite adequate grounds for intervention

In Cole's experience the most usual types of insanity occurring in pregnancy are the manic depressive type and dementia praecox When symptoms of exhaustion ensue in the first months of pregnancy from the severity of a mental disorder it is doubtful whether the termination of the pregnancy would be beneficial in fact it might make matters worse Refusal of food insomnia and suicidal tendencies require most careful observation of the patient but the pregnancy should be allowed to continue

Evers states that no purely speculative excuses for emptying the uterus should be entertained for a moment The procedure should be most rigidly restricted to conditions in which its value has been proved beyond doubt These conditions Evers believes are extremely few The burden of proof of indication or justification rests always with those who recommended the operation and many of the reasons given thus far have been largely speculative and unconvincing

In conclusion Evers says that he has been asked by Tyler to give the three following good reasons why the induction of abortion should be practically never considered

1 The enormous importance that is attached to the value of intra uterine life today

2 The great improvement in the medical treatment of most complications which has occurred in recent times

3 The fact that the dangers originally believed to be associated with pregnancy under certain conditions were most of a speculative nature and groundless

CARL H DAVIS M D

Smith M G On the Interruption of Pregnancy in the Rat by the Injection of Ovarian Follicular Extract *Bull Johns Hopkins Hosp Balt* 1926 xxvii 203

Within the last few years considerable study has been directed toward the definite cyclic changes in the vaginal mucosa of rodents during oestrus which can be determined and followed by the examination of vaginal smears The changes in vaginal smears were first used by Allen and Doisy for testing an ovarian extract Allen and Doisy have shown that an extract of ovarian follicular fluid will produce in the vaginal mucous membrane of an ovariectomized rat changes which are identical with those seen during the oestrus cycles in normal animals Smith undertook a series of experiments on rats to determine the effect of ovarian follicular extract upon pregnancy He draws the following conclusions

1 It is possible to interrupt pregnancy in the rat by the injection of follicular extract during the first five days of pregnancy

2 As the pregnancy proceeds from the first to the fifth day the injection of much larger amounts of the follicular extract is necessary to interfere with the course of the pregnancy

3 From these observations it seems probable that there is at least a difference in function between the follicular secretion and that of the corpus luteum

HARVEY D MATTHEWS M D

## LABOR AND ITS COMPLICATIONS

Bailey H Trial Labor in the Treatment of 477 Cases of Contracted Pelvis *Am J Obst & Gynec* 1926 xii 550

In trial labor in 477 cases of contracted pelvis the low flap cervical section was done when the head did not engage There were fifty nine caesarean sections with no maternal deaths and three infant deaths Of the twenty two elective sections fourteen were low flap operations Four patients had a postoperative fever In three the wound was infected In two cases in which a vaginal examination was made there was no puerperal morbidity

Thirty seven patients were subjected to section following trial labor Of these thirty five were operated upon by the low flap method Eleven of the group had been examined vaginally Twenty one had a fever of 100.4 degrees or higher for two days or longer In four cases there was a fever for two days in twelve for less than five days in one for six days and in four for eight days In twenty eight

cases with a postoperative fever the wound healed by primary union. In two cases it broke down, and in seven a stitch abscess developed. Only one of the patients had a serious postpartum condition. In most of the others the fever occurred in the first few days following the operation. Protection of the incision will eliminate some of the infections as it is probable that they occur when the child and the membranes are brought through the wound. The postoperative period was peculiarly free from the complications that usually follow the classical section.

F. L. CORNELL, M.D.

**Banister J. B. The Place of Induction of Premature Labor in the Treatment of Contracted Pelvis.** *Brit. M. J.*, 1926, 11, 519.

The author states that caesarean section is being employed too often in the management of pregnancy complicated by contracted pelvis. From his experience in 745 cases of contracted pelvis in which the induction of labor was done he draws the following conclusions:

1. The wider use of induction of labor in cases of contracted pelvis should be urged and is especially necessary today in view of the widespread employment of caesarean section. It should be urged, furthermore, because it is simple, safe, and unaccompanied by untoward complications and sequelae.

2. Premature induction of labor is not to be decided upon lightly but should be dependent upon very careful investigation and frequent examination.

3. It affords the only actual test of the power of the uterus under conditions which imply a reasonable chance of the survival of the baby.

4. It is an attempt to procure what is rightly regarded as the highest aim of the true obstetrician—a natural parturition.

HARVEY B. MATTHEWS, M.D.

**Spalding A. B. Limitations for the Caesarean Operation.** *Northwest Med.* 1926, xxv, 526.

Spalding reports on 2,000 consecutive birth records of the Board of Health of San Francisco, California. One thousand four hundred and eighteen (71 per cent) of the births occurred in hospitals. In 2,020 hospital confinements at the Stanford Hospital in the period from 1918 to 1926 the maternal mortality was 0.6 per cent and the fetal still birth mortality 2 per cent. In these 2,020 cases, 160 caesarean sections were performed, one in every twelve cases, with a maternal mortality of 2.4 per cent and a fetal still birth mortality of 4 per cent. When the operation was done on serious ill patients there was an increase in the maternal mortality. Of fifty-one patients with eclampsia fourteen were treated by caesarean section with a maternal mortality of 28.5 per cent, whereas in the cases of twenty-seven who were delivered spontaneously or by forceps or version the mortality was 19.9 per cent. The fetal mortality was 28.5 per cent in the caesarean section group, and 1.2 per cent in the other group.

In the clinic service of the Lane Hospital there were ninety-three caesarean sections in 3,777 confinements, or one in every forty deliveries. There were six deaths in this group, a maternal mortality of 6.4 per cent as compared with a mortality of 1.2 per cent in cases with other types of operative delivery and a mortality of 0.19 per cent in cases of spontaneous labor. Three of the six deaths in the cases of caesarean section were associated with eclampsia and one was due to acute miliary tuberculosis. Therefore only two maternal deaths, a mortality of 2.1 per cent, were chargeable to caesarean section.

The patient with eclampsia is such a poor operative risk that instead of being benefited by operation she is distinctly harmed by it.

CHARLES F. DUBOIS, M.D.

**Williams J. W. Caesarean Section at the Johns Hopkins Hospital.** *Northwest Med.* 1926, xxv, 519.

The prime indication for caesarean section is in proportion between the size of the fetal head and the pelvis. All other indications are of secondary importance.

The mortality increases from practically nothing when the operation is performed at the proper time before or just after the onset of labor to 10 or 15 per cent when it is done late in the second stage.

Sterilization by supravaginal amputation of the uterus with burial of the cervical stump is advised to prevent repeated sections on the same patient and to overcome the mechanical effects of uterine myomata obstructing labor. It is indicated also when signs of infection are present. The convalescence following this relatively severe operation is much more satisfactory than that following the simpler classical section because the involuting puerperal uterus does not offer ideal conditions for the combating of infection.

At the Johns Hopkins Hospital, Baltimore, the classical operation is restricted to patients upon whom it can be performed at an appointed time before or at least not later than six hours after the onset of labor. In all other cases, especially those with clinical signs of infection, the supravaginal amputation is done. Since adoption of this plan, only two patients have died from infection following the classical section and in a series of ninety-five radical sections there was only one death from infection.

In fifty cases in which caesarean section was done during the past eighteen months, Harris of Williams' clinic made cultures with a sterile cotton swab introduced into the lower uterine segment immediately following the birth of the child and before the fingers entered the wound. He found them uniformly sterile in all elective sections and constantly positive whenever more than six hours had elapsed between the onset of labor and the time of the operation, whether the temperature was elevated or not. In the positive cultures the predominating

bacterium was the streptococcus, which occurred both in the aerobic and anaerobic and the hæmolytic and non hæmolytic varieties

Williams agrees with Kronig, Beck and DeLee as to value of the low cervical section. When the time for the elective section has passed the low operation gives results which formerly could be obtained only by a radical operation and sometimes obviates the sacrifice of the uterus.

In 28 000 obstetrical cases there were 363 cesarean sections an incidence of 1.3 per cent or one to every seventy seven admissions. This is extremely conservative considering that one half of the patients were negroes in whom the incidence of pelvic abnormalities approaches 40 per cent.

Of 142 sections 80 per cent were done because of disproportion due to contracted p. lvis. The frequent employment of section in placenta prævia eclampsia breech and occiput posterior presentation is a serious abuse.

CHARLES F. DU BOIS M.D.

### PUERPERIUM AND ITS COMPLICATIONS

Goodman S. J. The Treatment of Puerperal Sepsis. *Ohio State M. J.* 1926 xxi 849

The prevention of puerperal sepsis is far more important than its treatment. In the presence of infection the uterine curette is a very dangerous instrument. When obstetrical procedures are carried out with the same judgment and caution as major operations puerperal sepsis will cease to occur. In the presence of puerperal sepsis conservatism is the procedure of choice. Operative interference is seldom if ever justified. Conservative treatment should consist in prolonged and absolute rest, fresh air, good food and good nursing care. Sera and intravenous injections of chemicals have been disappointing.

In conclusion Goodman says that the present puerperal death rate is a disgrace to the medical profession but there is little likelihood of any improvement in the statistics until the members of the profession learn to make a correct diagnosis and to recognize the cases in which operative intervention is necessary.

HARVEY B. MATTHEWS M.D.

### NEWBORN

Blanco L. V. and Paperini H. Meningeal Hemorrhage in the Newborn. *J. Am. M. Ass.* 1926 lxxviii 1261

From the standpoint of the symptoms the authors classify intracranial hæmorrhages of the newborn as extradural, subdural, subarachnoidal and intracerebral.

The subdural hæmorrhages are the most important, being the most frequent and most to be feared. They occur as the result of forceps delivery and version and as the result of pressure on the head as it traverses the pelvis. They have occurred also in

cases of spontaneous and easy birth and in the fetus extracted by cesarean section. It is possible that tetanic contraction of the uterus, abnormal fragility of the brain capillaries and infection or toxic diseases are factors.

There are two stages in the symptoms, that of excitement due to the increase of internal pressure and that of paralysis or paresis due to injury and exhaustion of the nerve centers. The newborn at first restless soon becomes apathetic and sleepy.

Asphyxia, the result of meningeal hæmorrhage, is often incorrectly stated to be the cause of many still births.

Hæmorrhage is the most frequent cause of convulsions in the newborn.

Continual pain is of great importance. The authors state that any newborn child that complains is subject to a grave illness and very frequently this is a meningeal hæmorrhage.

In the cases reviewed by the authors icterus was a frequent symptom. It appeared between the second and third day. Deluca of Larate's clinic says that icterus in the newborn is usually due to meningeal hæmorrhage produced during birth.

Lumbar puncture in meningeal hæmorrhage ordinarily confirms the existence of such hæmorrhage and is probably the surest of all diagnostic measures. When lumbar puncture yields a uniformly hæmorrhagic or at least a xanthochromic fluid without germs the diagnosis of meningeal hæmorrhage is usually correct. When the puncture itself produces the hæmorrhage the fluid is not uniformly hæmorrhagic. If the fluid in such cases is centrifuged it becomes quite limpid, whereas in meningeal hæmorrhage it remains yellowish (xanthochromic). The centrifuged fluid from cases of meningeal hæmorrhage shows altered red blood cells or crystals of hæmoglobin.

The possibility of a complete cure is doubtful and the prognosis as to life is very unfavorable if the hæmorrhage occurs in the first twenty-four hours. The sequelæ produced include idiocy, imbecility, mental debility, epilepsy, spastic diplegia and hemiplegia.

The treatment may be medical or surgical. The latter is possible only when the hæmorrhage is localized to cerebral areas having focal diagnostic signs. It varies from simple incision of the cranial suture line to trephining and craniotomy. Medical treatment consists in measures to diminish the cranial pressure and effect hæmostasis. These two objects are both accomplished by spinal puncture which may be done several times a day if necessary. The intraspinal injection of normal horse serum in doses of from 10 to 30 c.c. two or three times in twenty-four hours is advised. With the horse serum the authors have given 10 per cent gelatine solution by subcutaneous injection in doses of from 10 to 20 c.c. repeated twice in twenty-four hours.

CHARLES F. DU BOIS M.D.

# GENITO-URINARY SURGERY

## ADRENAL, KIDNEY, AND URETER

Williamson C S Further Studies on the Transplantation of the Kidney *J Urol* 1926 **xvi** 231

Williamson reports a continuation of his studies on experimental transplantation of the kidney. In most of his cases the kidney was placed in a pocket in the neck and its artery and vein were anastomosed to the carotid artery and the external jugular vein respectively. The technique is described in full. In a number of experiments Carrel's method was followed, the kidney was transplanted into the abdomen and circulation re-established through the aorta and vena cava.

All autogenous transplants were made into the cervical area. The excretion of urine was at first slow and periodic, but rapidly increased and within a few hours amounted almost to a small stream. This condition did not last unless the remaining kidney was removed at the time of the transplantation. Williamson found it best to remove the normal kidney between the third and fifth day and thus guard against surgical accident to the transplanted organ. The longest time of survival of the autogenous transplant was nine months. Death was due usually to poor drainage caused by cicatricial contraction of the ureter and overgrowth of the ureteral opening by the skin. In many cases the urine excreted by the transplanted kidney was normal but it sometimes showed casts and usually contained albumin. The urea content and the rapidity of excretion of phenolsulphonephthalein were normal. The quantity of urine during the first few days exceeded that excreted by the normal kidney.

The transplanted kidney was examined histologically to determine its condition at different stages. During the first eighteen hours there was slight oedema of the tubules with rather marked congestion of the cortex. The tubules and glomeruli were normal but the latter were somewhat congested. The tubules contained a varying amount of hyaline-like material which the author considered to be coagulated blood serum although he was unable to account for its presence. There was little change in the histological appearance of the transplant. Failure of function began when hydronephrosis and infection appeared.

For homogenous transplantation the donors were chosen at random and there was slight possibility of breed or blood relationship. In most of the experiments urine was beginning to be discharged at the conclusion of the operation and during the first day the amount excreted was often as great as, and sometimes greater than the combined output of both normal kidneys would have been. The spe-

cific gravity, however, was often low. The homogenous transplant seemed to function perfectly for from one to ten days. If the normal kidneys were in place, however, the concentration of blood urea was much decreased. The first sign of abnormality, usually noted on about the fourth day, was a slight increase in the size of the kidney. The rate of excretion then began to diminish, this sometimes resulting in the rapid establishment of anuria. If the normal kidneys had been removed the urea nitrogen in the blood increased. Diuretics were then ineffective and death ensued from uræmia from forty-eight to seventy-two hours after the onset of anuria.

Examination of the transplants was made at intervals. Histological study indicated that the glomeruli first showed abnormality and then the tubules. The first glomerular change consisted in an infiltration with lymphocytes which steadily increased until a few red blood-cells were seen escaping. Later, the predominant changes were in the glomeruli or in the tubules, depending apparently on whether cessation of function was rapid or relatively slow. At the time that the tubules showed infiltration and cellular degeneration in ascending infection appeared. So far as the author has been able to determine, infection does not begin until the physiological changes in the transplant begin to impair and diminish the urinary output.

Only two experiments on the heterogenous transplants were performed. The donors were goats and the recipients dogs. In both cases the recipients died within a few minutes after the release of the circulation through the transplants, apparently from anaphylactic shock. Histological examination showed that the organ was filled with clumped red blood cells which appeared to be plugging the vessels. There was no evidence of clotting.

The author attributes the survival of the homogenous transplants to the biological reaction of the recipient and the varying length of life, especially in those reported by Carrel, to a biological relationship between the donor and recipient. Williamson suggests also that the biological reaction of all tissues may or may not correspond to that of the blood. The author sees a possible surgical application of his study and believes it possible that a healthy kidney removed from a subject recently dead may be successfully transplanted if studies previously made have shown compatibility of the blood.

Fev B The Functional Results of Retention in the Renal Pelvis (Les retentions pyéliquies fonctionnelles) *Arch urol de la clin de Necker* 1926 **v** 93

Retention of urine in the pelvis of the kidney must not be confused with distention of the pelvis. It is



due usually to a functional disturbance of the pyelo ureteral motor apparatus which controls the evacuation of urine from the renal pelvis to the bladder. The emptying can be studied by pyeloscopy or by fluoroscopy of the renal pelvis filled with an opaque fluid.

Fey and Truchat make a pyeloscopic examination after a functional examination but never on both sides on the same day. The ureter is catheterized to the pelvis since if this is not done a reflux usually prevents injection of the pelvis. The position of the ureter is determined by the use of an opaque sound. The injection of sodium iodide which is made with a syringe is stopped when the pelvic shadow appears distinctly outlined. A plate or a tracing of the image is then made. Gentle injection of a little fluid is done while the sound is slowly withdrawn to reveal any ureteral kink or stricture.

If evacuation is slow its progress is followed fluoroscopically only every two minutes. The movements noted are indistinct pelvic contractions which when very accentuated as in certain hyperkinetic pelvises resemble mixing movements and an evacuation movement. At the ureteral mouth the shadow lengthens and forms a cone shaped cul de sac with its base toward the renal pelvis and its apex toward the ureter. This cone is from 1 to 2 cm high and at its base is separated from the shadow of the renal pelvis by a furrow. The opaque fluid enters the ureter by rapidly forming a lumbar spindle. The original regular pelvic shadow then returns until the next contraction. The contractions recur at the rate of from two per second to two in three seconds until the fluid is entirely evacuated. Even rapid emptying is not continuous. Each bolus forms at the level of the so called ureteral bulb.

The evacuation time (from two to eight minutes in normal pelvis) is an important criterion of the pelvic motor action. As the time varies with the capacity of the pelvis the fluid injected is measured. The formation shape and rhythm of production and evacuation of the ureteral bulb should be noted. The data obtained in the first few minutes of the examination are generally sufficient to indicate the character of the evacuation and to show the emptying time.

The abnormal conditions caused by pyeloscopy exaggerate but do not create the pelvic movements. Crystals originate principally at the ureteropelvic juncture also perhaps in the calyces and certainly in the ureter.

Normally the fluid dilates the ureter to the end or the sound where contractions arise which force the fluid into the bladder. Forcing the fluid across the ureteral neck by increased pressure always causes pain. The renal pelvis normally contains little urine but has a reservoir function. Disturbance of the function of the sphincter causes a dynamic pelvic retention.

Pelvic retention is diagnosed from the clinical symptoms the findings of ureteral catheterization and the findings of a pyeloscopic study of the pelvic

motor action. The pathological pelvis shows changes of filling and emptying. A large residue in a dilated pelvis is indicated in the roentgen picture by scattered and movable flakes on a large diffuse shadow with pale outlines. The ureteral bulb formation may be absent or sluggish or occur only after intervals of many seconds. The bulb form may be irregular and show permanent deformities.

Cuyon found in the renal pelvis as in the bladder aseptic septic complete incomplete acute chronic temporary and permanent retentions. They classify retentions as complete or incomplete and with or without distention. Duval and Grigore distinguish (1) acute retentions without distention (closed hydronephroses) and (2) retention occurring in the course of a chronic retention (intermittent hydronephroses). Fey and Truchat call these (1) acute definite retentions of mechanical origin and (2) acute transient retentions of spasmogenic origin. The latter the ordinary renal colics are due to spasms of the pelvic sphincter. The painful crises are symptomatic of a lesion of the excretory apparatus (pelvis ureter) such as pyelo ureteral nephroses and the migration of caseous debris hydritids stones or blood clots. They may be produced also during tests of the pelvic capacity and during pyelography by tension on the pelvic walls from slight over filling. The pain is due to spasm.

A contracted ureter causes attacks analogous to intermittent hydronephrosis. Such acute crises are of a congestive or spasmodic origin. Renal colic has occurred after nephrectomy when a stone was left in the ureteral stump. Distentions principally of a mechanical origin have developed insidiously without producing renal colic. The painful spasms generally occur in undistended pelvises. The pain is most severe in small pelvis develops slowly in large pelvis and in large sacs is practically negligible because the fluid flows toward the bladder before the pain occurs.

Whatever the origin of the renal colic the spasm produces an acute retention in the renal pelvis. If the spasm is transient and mild the retention is minimal and there is a rapid return to normal. If the spasm is prolonged the retention reaches or passes the physiological capacity of the renal pelvis and becomes itself a cause of spasm. Thus there is formed a vicious circle which prolongs the painful crisis. Acute pelvic distention from retention occurs and at the crisis the typical syndrome of intermittent hydronephrosis with tumor and oliguria is seen. Hence prolonged renal colics are today treated by ureteral catheterization. The pain ceases abruptly when the catheter enters the renal pelvis. Prolonged renal colic is evidence of acute retention in the renal pelvis.

The author has never made a pyeloscopic examination at the height of a crisis. In a study of the pelvic motor action between crises valuable information regarding the pelvis and the cause of the spasm may be obtained. In most retentions there is no renal tumor. Such a tumor occurs only

in advanced stages of gross retention with distention

Chronic complete retention is characterized by absence of contraction. The renal pelvis is filled without pain and after the withdrawal of the catheter no movement occurs. The shadow form in the roentgen plate remains no bulb is outlined. Observation for from one half to one hour shows no emptying. The opaque fluid is gradually diluted by the secreted urine and on the following day the shadow in the roentgen plate is gone. Secondary deformities due to the distention may produce mechanical obstruction. In three cases the author was obliged to recatheterize to empty the fluid.

Chronic incomplete retention may show (1) slight retardation of emptying (usual in pyelonephritis), (2) marked retardation of emptying with slow formation of the ureteral bulb (3) a residue, or (4) intermittent retention. In the type with residue the emptying begins normally with distinct contractions but the boluses form progressively farther apart and finally are apparently stopped, the opaque mass then remaining unchanged for from fifteen to thirty minutes. In other cases the residuum not filling the pelvis persists for some time only at a certain point and may be mistaken for slow emptying.

Intermittent retention occurs in cases of movable kidney with kinking of the ureter.

Retention and distention are distinct, but retention often precedes and leads to distention.

Acute retention often leaves no distention, but always is followed by some excitation of the motor action (exaggerated emptying) or incomplete retention. The pelvis may be dilated or normal but pyeloscopy constantly shows disturbance of evacuation. Hence the pain is due, not to distention but to a spasm in a functionally disturbed motor apparatus. Dilated pelvis may empty very quickly and undistended pelvis may show retention. The dimensions of the pelvis are difficult to appreciate from the pyelographic image. The capacity of the pelvis varies greatly in the same and different persons. Small deformities of the calyces are unimportant as they depend largely on the incidence of the normal ray and the relation of the calyces to the plate. Pyelographs in series show that the physiological contractions modify the image of the pelvis and calyces. A 'T' insertion of the ureter in the pelvis which is not rare in normal persons and a Swan neck prolongation of the pelvis noted at the moment of the formation of the ureteral bulb have no pathological significance.

Chronic retention and distention do have a constant relation to each other. Chronic retention without distention is more frequent than distention without retention. Both arise from a change in the pyelo-ureteral muscle. Retention is due to a disturbance of motor action and distention to a disturbance of motor tone (dilatation from atony). Retention is more painful than distention. The motor action may be the first to return to normal. Marked distention seen in a pyelograph suggests

the loss of all pelvic contractility. When dilatation is absent or slight the most exact information with regard to therapeutic indications and prognosis is furnished by pyeloscopy. Hence the author inquires not whether there is retention with or without distention but whether the retention is complete or incomplete and what its degree may be.

Retention in the renal pelvis may be caused by mechanical factors, congenital malformations, dilatation secondary to infection or atony of the ureter and renal pelvis, and spasmodic ureteral obstruction by a hypertrophied circular muscle at the lower end of the ureter. Under certain conditions such as when it is situated at irritative points and in cases of spasmophilia a calculus or an abnormal artery may excite motor disturbances leading to spasm. There are irritative points which if repeatedly stimulated, cause a disturbance of the contractility of the renal pelvis leading to chronic retention.

Calculus is an important cause of acute spasmodic retention and seems sufficient to produce all of the disturbances of chronic retention. The retention is generally more marked than the distention. Lithiasis is associated with sclerosis and more or less infection of the renal pelvis.

According to the findings of pyeloscopy, an abnormal artery at the ureteral bulb does not cause mechanical obstruction. The line persists clearly in spite of bulb formation, but the fluid passes well and evacuation occurs normally.

A factor in the development of hydronephrotic crises is an aberrant artery. Such an artery is usually fixed in the ureteral wall by fibrous tissue rich in nerves. Section of the artery stops the crises.

Most movable kidneys have no painful crises in some the pelvis is dilated. Movable kidneys empty normally in spite of accentuated ptosis, or empty poorly or show intermittent incomplete retention due to transitory mechanical obstruction. When the kidney is ptosed the boluses cease to form, the bulb is not outlined and all pelvic contractions stop. Hence ptosis may lead to retention through dynamic disturbance rather than mechanical obstruction. Kinks and T shaped junctures of the ureter with the pelvis may prevent emptying.

The author has never studied retention in parietal lesions (strictures) by pyeloscopy because of the fear of causing pain and reflex disturbances of motility. Strictures occur normally after slight contraction of a segment of the ureter and are not pathological unless they are noted repeatedly.

The evolution of pelvic retention is characterized by (1) a series of painful crises (2) the intermittent appearance of a tumor with persistent attacks of pain, and (3) the appearance of a fixed tumor with more acute continuous pain, a sensation of heaviness and a drawing in of the flank. When the attacks of acute spasmodic retention first occur the dimensions of the pelvis and pelvic evacuation are normal. The fatigue of the pelvic musculature from the recurring attacks then becomes manifested by disturbances of motor action (hyperkinesis followed by

chronic incomplete retention) and by atonicity (distention). The spasmodic attacks then gradually become less frequent and finally cease. With loss of the pelvic motor action, complete retention supervenes and the pelvis becomes passively distended with urine. Hence spasm an important factor determining hydronephrosis disturbs the pelvic musculature and the emptying of the pelvis by its duration and repetition and leads to atonic distention.

Pyonephrosis is caused by infection which aggravates pre-existing retention (infected hydronephrosis) or causes retention (pyelonephritis). In the first instance the infection increases the disturbances of pelvic motor function and hastens complete retention. In the second instance it corresponds to an ascending or descending infection of the ureter and renal pelvis. In pyelonephritis the infection leads to retention by causing a functional disturbance of the emptying of the pelvis. The muscles subjacent to an inflamed serous or mucous membrane may be affected functionally. Long persisting infection causes infiltration and thickening of the walls the formation of kinks and lengthening of the ureter resulting in an inflammatory stricture across which the purulent urine escapes with difficulty. As ureteral catheterization is usually possible the mechanical factor seems to be of secondary importance.

The open pyonephrosis is more common than the closed. In these conditions pyeloscopy examinations will show all of the phases of incomplete and complete chronic retention with and without distention. As the relation between the degree of infection and the delay in emptying is almost constant a vicious circle is established which ends in complete pelvic retention and distention. By pyeloscopy the author has noted that pyelonephritis with good motor emptying is generally cured by the usual therapeutic measures (pelvic lavage, vaccination etc.) if coli bacilluria does not result from an intestinal condition such as appendicitis, colonic stasis or helminthiasis and that when the pelvis empties poorly the usual treatment is often of no benefit.

The therapeutic indications in pelvic retentions are as follows:

#### ASEPTIC RETENTIONS

1. Acute spasmodic retention without chronic retention is combated by medicinal antispasmodics, suppression of the irritative point or renal innervation. First the general condition must be improved. Benzyl benzoate and belladonna are indicated to relieve the crises. If medical measures fail removal of the irritation point (section of an aberrant artery, removal of a stone, nephropexy) are indicated to relieve the pain. Papin's innervation breaks the reflex arc which causes the spasm. On pyeloscopy examination Papin noted favorable emptying after this operation.

2. In incomplete retention the irritative point must be eliminated but whether by antispasmodics or by renal innervation is an open question. When the motor action is satisfactory the retention and

distention may regress and the pelvis recover its integrity. Hence measures to free the pyelo-ureteral region such as section of an abnormal artery, pyelotomy for the removal of a stone, nephropexy and the correction of kinks are indicated. Plastic operations give unsatisfactory results and are associated with the danger of destruction of the principal motor center in the bulb region with loss of the remaining motor efficiency.

3. Complete retention requires nephrectomy. Conservative measures fail.

#### SEPTIC RETENTIONS

1. Complete retentions whether associated with infected hydronephrosis or a dilatation pyonephritis have the same outcome and demand nephrectomy. When possible the nephrectomy should be primary. In other cases it may be preceded by nephrostomy.

2. Incomplete retentions necessitate treatment of the infection. If the retention is primary suppression of the cause (stone, abnormal artery, ptosis etc.) is important. Recovery may be hoped for. The infection disappears either spontaneously or under treatment. If the infection is primary the condition usually evolves toward pyonephrosis and requires an early nephrostomy before complete retention becomes established. Early nephrostomy probably acts favorably on both the infection and the retention. It places the pelvis at rest, prevents distention, may permit recovery and disinfection and has a favorable influence on the motor disturbance.

WALTER C. BURKET, M.D.

Beer, E. Uric Acid and Uratic Stones in the Kidney—Uric Acid Showers and Their Diagnosis. *Surg. Gynec. & Obst.* 1926, LXXI, 436.

Beer calls attention to the difficulty of recognizing uric acid stones in the upper urinary tract in the X-ray plate. Even with the use of the Buckley screen, small stones composed of uric acid may be missed. Beer has had no success in rendering these opaque stones visible by coating them with opaque solutions such as argyrol.

An analysis of 136 stones removed from the kidney during the past four years in Beer's clinic showed that 10 per cent of the stones were composed of almost pure uric acid with only traces of calcium salts. Hence we are running the risk of diagnostic error in approximately 10 per cent of the cases of kidney stone. Beer reports six recent cases in which the diagnosis was made by using all of the usual methods of examination in addition to the demonstration of a filling defect. Usually it was confirmed by obtaining a positive scratch mark on a wax whalebone bougie passed into the suspected kidney.

These studies show that sizable stones failing to show a shadow on the X-ray plate are not at all infrequent in the upper urinary tract and can be recognized only by the most careful methods of study. Most of the patients with such stones have suffered for a long time. The most valuable objective diagnostic criteria are a diminished output of indigo

carmin and a defect in the pyelographic filling of the pelvis on the side of the stone

Beer describes also a group of cases characterized by showers of uric acid which produce a clinical picture similar to that due to stone in the kidney—typical colics on one or both sides associated usually with the appearance of red blood cells in the urine. On standing the urine deposits crystals of uric acid which adhere to the sides of the container. The freshly voided specimen shows no uric acid crystals. These are precipitated in passing down the ureter become redissolved in the bladder and pass out in solution. The mechanism by which this is accomplished is explained by Beer on the basis of the behavior of the reversible colloids of the urine. On several occasions on which specimens obtained by ureteral catheter from one side have shown a precipitation of crystals specimens obtained from the other side have shown none. In a recent case the urine from the right side was full of the crystals while that from the left side precipitated none. This condition has been found repeatedly.

The diagnosis can be made only by allowing the urine to stand preferably in a sterile container, for from forty eight to seventy two hours. Specimens are sometimes so highly acid that they will remain for months without putrefaction. Occasionally, though rarely, cystoscopy reveals uric acid crystals on the floor of the bladder. In such instances the colloidal reversal had not had time to take place.

It is not claimed that all patients whose urine precipitates uric acid on standing have had recent attacks of ureteral or kidney colic. It is believed, however, that when patients in whom the X ray, cystoscopic, and pyelographic studies have been negative complain of typical ureteral and kidney colic and their urine precipitates uric acid crystals on standing, there is some connection between the latter phenomenon and the syndrome of which the patient complains. HARRY A. FOWLER M.D.

**Roseno A.** Postoperative Hæmorrhage Following Nephrotomy and Its Prevention (Die Nachblutung bei Nephrotomen und ihre Verhütung) 50 Tag d. deutsch Ges f. Chir. Berlin 1926

The danger of hæmorrhage after nephrotomy is very great. Hæmorrhage occurs in 9 per cent of the cases and in 59 per cent of these it is fatal. Combating it by thorough and through suture is not sufficient and injures the parenchyma of the kidney. The blood vessels which are cut in nephrotomy penetrate into the interstices between the papillæ in the parenchyma and in the columns of Bertin where they lie about  $1\frac{1}{2}$  cm apart and give off branches into the corresponding pyramids.

Where these vessels are cut through the parts supplied by them are destroyed. A ligature at the point of severance in the Bertin's ligament does not increase the loss of parenchyma. The loss it causes is only a fraction of that produced by the thorough and through suture which is followed by atrophy and infarction.

Therefore in nephrotomy the easily visible vascular lumina in the columns of Bertin which have been cut through should be sought, caught with small forceps and ligated.

Before such ligations were done in clinical cases they were done on the kidneys of goats. The author describes the specimens in detail. They show that the healing of the wound was very good, the infarction as compared with that following suture was slight, and the destruction of viable tissue was minimal.

In thirty three cases in which nephrotomy was performed by the old method in the period from 1913 to 1926, postoperative hæmorrhages occurred in three. In five, a secondary nephrectomy was necessary. Four of the patients died. In the five cases in which the new method of nephrotomy was used there was no hæmorrhage. SEITZNER (Z)

**Lipshutz B. and Hoffman, C.** Renal Arterial Variations and Extraperitoneal Abdominal Nephrectomy. *Ann Surg* 1926, LVII, 525

The frequent variations in the anatomical types of the renal blood vessels found at autopsy and at operation are of great importance to the surgeon. The manner of development of the kidneys predisposes these organs to anomalies. The renal arteries vary in their number, origin, course, and anatomical relations. Kidney abnormalities are often associated with abnormal blood vessels. There is some variation in the arterial supply in from 20 to 33½ per cent of cases.

Two specimens are described in detail. The arteries and veins were unusual in number and origin. The ventral lip of the hilus was absent on both sides. Both specimens showed hypertrophy with moderate ectopia.

In the performance of the usual operation for the removal of a kidney, there are many possibilities for injury. Injury to the parietal peritoneum, the cæcum, and the colon, hæmorrhage from an accessory renal artery or an aberrant vein and tearing of the vena cava inferior have been reported. These possibilities are practically eliminated by the extraperitoneal abdominal incision. Such an incision is especially valuable for the removal of large cysts or tumors and its use is associated with less danger of metastasis because the renal vein can first be ligated. Its practical value has been demonstrated also in the treatment of traumatic lesions and horseshoe kidney. CLAUDE D. PICKRELL M.D.

**Joseph E.** The Removal of Deeply Situated Ureteral Calculi (Entfernung tiefsitzender Uretersteine) 50 Tag d. deutsch Ges f. Chir. Berlin 1926

Deeply situated ureteral calculi are often operated upon too late with the result that the kidney must be sacrificed later by secondary extirpation. In the futile hope that the stone which has traveled a distance of 28 cm. will pass the remaining few centimeters the patient and his physician frequently

delay treatment too long. In the meantime the kidney is destroyed by infectious hydronephritic congestion. Therefore in cases of deeply situated ureteral stones the author proceeds as follows:

Medical management is first attempted with the pushing of fluids diuretic measures such as the administration of glycerine lemonade and the hyphophysin injections recently recommended by Bergmann.

If medical measures fail an attempt is made to remove the stone from the mouth of the ureter by means of the cystoscope. The best method is the introduction of a thin ureteral catheter which can be left in for from twelve to forty eight hours. The ureteral wall becomes softened and slippery so that eventually the stone may fall through into the bladder or because of its adherence to the catheter can be drawn into the bladder. The outlook is still more favorable when two thin catheters can be introduced into the ureteral opening. If it is impossible to introduce a catheter past the stone it is sometimes possible to insert a whale bone bougie and allow it to remain in. The author warns against splitting of the ureteral orifice with scissors or the caution of the operating cystoscope in cases of ureteral stone as the trauma so caused not infrequently leads to complete closure of the ureteral lumen by swelling and produces severe septic phenomena in the kidney. Therefore such measures are not only useless but dangerous. When the calculus is visible in the ureteral orifice attempts to free it are unnecessary as it will usually free itself.

If operative liberation of an intramural ureteral stone is indicated the incision usually employed to ligate the iliac artery is used but instead of making the outer third of this incision Joseph prolongs it transversely inward across the symphysis. In the lengthened portion the fascial sheath of the rectus is split and the muscle pulled to one side. The exposure so gained is satisfactory even in very obese patients. The peritoneal cavity is not opened. The midline longitudinal incision recommended by American surgeons and by Key is very convenient and gives easy access to the lower portion of both ureters. For this incision however the stone must be firmly fixed so that it will not wander upward toward the kidney when the pelvis is raised.

JOSEPH (7)

## BLADDER URETHRA AND PENIS

Colby F H. Bladder Symptoms from Congenital Deformities with Associated Nerve Lesions. Report of Three Cases. *Boston M & S J* 1926 cxcv 804

The author reports three cases presenting urological symptoms due to congenital deformities with associated nerve lesions.

Case 1 was that of a man 37 years of age who for the past thirteen years had had difficulty in urination. A herniotomy done during this time was followed by retention and catheterization resulted in

cystitis. Occasional catheterization then became necessary. Four years later an operation for contraction of the internal vesical orifice was done and was followed by considerable relief. A few years later an appendectomy was performed and a small rectal fibroid was removed. Thereafter the bladder symptoms became progressively more severe. During the past year continual catheterization had been necessary. Rectal control was poor and had been growing gradually worse.

Ten years ago the patient was found to have a spina bifida occulta with slight changes in the reflexes in the legs and a small area of diminished sensation over the sacrum. X ray examination showed the typical bony deformity associated with spina bifida. On exposure of the bony defect at operation performed November 9, 1925 a mass of fat tissue investing a swollen sac of the dura was found. This fat mass was removed and the incision closed. For three or four weeks after the operation the bladder was catheterized at regular intervals. The patient then began to void naturally and he has now no residual urine. Today the rectal symptoms are unchanged and the Achilles reflex is absent but the numbness about the perineum and the back of the thighs is less marked.

The second case reported was that of a 22 year old girl who had been an invalid since infancy. Extensive ulcerations made necessary an amputation of the left leg at the thigh and soon thereafter a partial amputation of the right foot. As long as the patient could remember she had had urgent urination and difficulty in the control of the bladder and bowel sphincters. Four days prior to her admission to the hospital she had severe pain in the right lumbar region and retention in the bladder of 500 ccm of infected urine. X ray examination revealed spina bifida occulta with absence of the arches of the fourth and fifth lumbar vertebrae. Because of the severe bladder infection and the bilateral pyelitis any attempt to repair the underlying defect seemed impossible. Some relief was given by the use of an in lying catheter and irrigations but it was insufficient for proper bladder function.

Case 3 was that of a boy of 17 years who at birth had an imperforate anus. The anus was operated upon successfully but the patient had always been in delicate health. He suffered from frequent attacks of pyelitis and his urine was never free from evidences of infection. X ray examination showed six lumbar vertebrae but no coccyx and a fused kidney on the left side. Operation was not regarded as advisable.

CLAUDE D HOLMES MD

## GENITAL ORGANS

Fronstein R and Meschebowski G. Recurrence Following Prostatectomy by the Method of Freyer (*Ueber Rezidive nach der Freyer'schen Prostataktomie*) *Ztschr f urol Chir* 1926 xc 22

In rare cases the disturbances of urination persist after prostatectomy or new ones develop. When this

is due to insufficiency of the musculature of the bladder the condition is a purely functional recurrence. However, there is also the possibility that a correctly performed enucleation of the gland may be followed by a true anatomical recurrence. Adenomatous nodes arise from glandular remains left in the capsule. When renewed disturbance of urination is due to incompleteness of the operation or a carcinomatous degeneration the condition is a pseudo recurrence.

True anatomical recurrences are very rare. To prevent them the tumor must be removed *in toto* at the time of the operation and after its removal a very careful search of the field should be made for nodes that may have been left behind. Recurrences are less frequent following the suprapubic operation than following the perineal operation.

(RAHMAN (Z))

### MISCELLANEOUS

Hinman F and Redewill F H. Pyelovenous Back Flow. *J Am U 155* 1926 LXXVII 1287

In this article the authors continue their discussion of the condition to which they have applied the term pyelovenous back flow and report further facts determined by experiments carried out since the publication of their previous articles. They say: 'The most important anatomical facts relative to pyelovenous back flow have to do with the relationship of the pelvis and its branches to the renal venous system. The veins of the kidney in marked contrast to the arteries freely anastomose. Particularly in the zone between the cortex and the medulla are rich venous arcades between the larger interlobar veins many of which are in very intimate relationship to the finer terminal branches of the minor calyces. At some of these terminal pelvic divisions the veins almost completely encircle the form calyces. The venulae rectae in the medulla which are richer, so far as number and size are concerned as compared to the arteriola rectae, are also in very close relationship to the collecting tubules as well as Henle's loops and it is this particular area that must be considered with respect to certain aspects of pyelovenous back flow. With respect to the tubular system and its relation to its blood supply, the definite zones of cortex and medulla are differentiated by reason of the renal tubule itself being confined to the cortex. Henle's loop only penetrates to a deeper level and it is between these two zones in the corticomedullary portion that the venous arcades exist, into which the radiating interlobular veins drain.

The two important portions of the kidney as emphasized in the foregoing anatomical discussion in which the penetration of pelvic contents into the venous system most readily occurs are at the acute angle terminations of minor calyces, where the pelvic mucosa is in intimate relationship to large venous spaces or in the collecting ducts, also in intimate relationship to rich venules. The differ-

ence in appearance of a tubular back flow and a pyelovenous back flow can be demonstrated. The outline of the arcuate veins is characteristic of the latter. Tubular back flow is seldom seen except in the human and dog kidney. Ordinarily there is a penetration up the collecting ducts for only a short distance.

The dangers of pyelovenous back flow at the time of pyelography would be removed if the pelvis were first washed out with tenth molar sodium chloride and then with sterile distilled water thus ionizing the cellular membranes because the pressure required to produce the back flow will be so much increased that there will be practically no danger of the occurrence of pyelovenous rupture.

The following factors are probably of importance in the occurrence of pyelovenous back flow: diapedesis, osmosis and permeability of the membranes. The authors state in detail the technique of the experiments by which the existence of this condition is proved. The article includes interesting illustrations.

HENRY L. SANFORD M.D.

Mixter C G. Urinary Obstructions in Childhood. *Ann Surg* 1916 LXXIV 533

A complete urological examination should be made in every case with symptoms of urinary retention or pyuria. In the author's cases the preliminary urinalysis is followed by tests of renal function, blood chemistry determinations, the making of a cystogram and cystoscopy with pyelograms and ureterograms. If phimosis and a small external meatus are eliminated, the three usual sites of obstruction are the uretero-pelvic junction, the vesical insertion of the ureter and in the male, the prostatic urethra. A stricture at the uretero-pelvic junction and faulty implantation of the ureter in the pelvis are causes of hydronephrosis. If nephrectomy is not indicated a plastic operation may be beneficial. A ureteral kink may be found.

Stricture of the ureteral opening in the bladder may be present with or without cystic dilatation. If cystic dilatation is present, excision of the cyst is indicated. If fulguration is possible it is the method of choice. If there is no cystic dilatation, slitting of the ureter from the orifice upward for  $\frac{1}{2}$  in may give good results.

Diverticula are rare in children, but may cause obstruction at the vesical neck.

Obstruction in the male urethra may be caused by folds forming valves and by enlargement of the verumontanum. More rarely, a congenital stricture may be present. Two cases of congenital stricture in the prostatic urethra were found due to faulty development. One case was operated upon but the other responded to dilatation. The bladder ureters and kidneys showed the typical results of obstruction.

Obstruction of the ureter may be caused by the external pressure of accessory vessels to the lower pole and reduplication of the renal pelvis and ureter. Care should be taken to ascertain if the vessel is

the only source of blood supply to the lower pole. The operative procedure in ureteral duplication depends upon the requirements of the particular case.

Megalo ureter may be encountered in children and may be bilateral. Its etiology is still in doubt but the condition is usually considered to be congenital. A careful study may show an obstruction especially in the prostatic urethra in boys. In the female urethra even valve like folds may cause an obstruction. Operative procedures in true megalo ureter have been unsatisfactory because of the patient's poor condition. Shifting of the ureteral orifices may benefit but bilateral nephrostomy should be considered. CLAUDE D. PICKRELL, M.D.

Hyman, A. The Clinical Aspects of Surgical Diseases of the Urinary Tract in Children. *J. Urol.* 1926, xvi, 259.

This article is based on a study of 150 cases of surgical diseases of the urinary tract in children seen at Beer's clinic at the Mt. Sinai Hospital, New York. Attention is called to the increasing consideration which has been given diseases of the urinary tract in infancy and childhood during the last few years. While the early literature abounds in post-mortem reports of such cases, their recognition is now made easy during life by routine examination with small caliber cystoscopes.

Routine study of these cases was stimulated by Beer in 1907 and since 1911 has been advanced by Hyman, Kretschmer, Hinman, Stevens, Quinby, Lowsley, Helmholtz, Bugbee, Thomas and Tanner and others. Cystoscopes for the work are from 9.5 to 12 cm. long and have a caliber of from 10.5 to 15 F. Intravenous indigocarmine is used regularly as a test for renal function combined with cystoscopy. A regular routine study is carried out exactly as in adults. Young children require narcosis but in the cases of children from 7 to 10 years of age narcosis is seldom necessary.

The patients whose cases are reviewed by the author ranged in age from 6 weeks to 14 years. The majority were between the ages of 4 and 8 years. Cystoscopy was performed 145 times. Lesions closely paralleling those in adults were found. In 62 per cent of the cases the lesions were in the upper urinary tract. Of ninety-four cases of kidney disease, twenty-one were cases of pyelitis, seven were cases of pyelonephritis, ten were cases of tuberculosis and twelve were cases of neoplasm. Of forty-eight cases of bladder conditions, twenty-eight were cases of chronic retention. Fifty per cent of the cases were referred on account of persistent pyuria. Hematuria in childhood is rather uncommon. Hereditary diseases of childhood may be masked by intestinal and meningeal symptoms.

Pyuria is the most common sign. In the cases of female children all specimens for microscopic and bacteriological examination must be obtained with the catheter. Very few instances of pyelitis in male children have been seen. Many cases diagnosed as

pyelitis without cystoscopy were found to have other more serious complications. The youngest child with pyelitis was a male 6 weeks old in whom jaundice was present for a week.

Tuberculosis is very infrequent in children under 8 years of age. In over 85 per cent of the cases tubercle bacilli were demonstrated in the smear. Eight of ten cases showed a characteristic cystoscopic picture. In eight cases nephrectomy was done and followed by rapid improvement.

Hydronephrosis occurred in ten cases, not including twenty in which it was due to obstruction at the vesical neck. In one case that of a male child 6 weeks old there was a stricture at the ureteropelvic junction. Nephrectomy was successfully performed. In six cases classified as congenital there was a stricture at the pelvic outlet.

A perinephritic abscess, cortical abscess or carbuncle was found in eleven cases. The diagnosis offers the same difficulty as in adults. The usual cause is a staphylococcus infection from a distant focus.

Male children are more often subject to urinary lithiasis than female children. Of a series of 2,000 cases collected from the literature, only seventy-seven were those of females. In from 6 to 10 per cent of the cases renal calculi are bilateral. Practically all stones originate in the kidney. From 60 to 70 per cent are passed spontaneously into the bladder. In obstinate cases of encrustation an examination for stone should be made. Rectal examination should never be omitted.

In tumor of the kidney hematuria appears late and in the cases of children may often fail to occur. It was present in four and absent in eight of the cases reviewed. The first sign in many cases is a large abdominal mass. Most cases are inoperable when they are first seen. In 4 per cent of the cases reviewed the condition was bilateral.

By far the greater number of anomalies of the urinary tract occur in the upper part of the tract. Such anomalies lead to hydronephrosis and pyonephrosis. Congenital malformations in the posterior urethra and the neck of the bladder were found in twenty-eight of the cases reviewed and a congenital diverticulum was found in three. A marked pyuria in these cases shows how prone they are to infection. Persistent pyuria should suggest the presence of a congenital anomaly.

The etiological factors of chronic retention in children are given by Beer as follows:

1. Mechanical obstruction extravascular—congenital folds and strictures in the posterior urethra; a pinpoint meatus; a contracted prepuce; new growths; intravascular—contracture of the neck of the bladder; diverticulum and stones.

2. Neuromuscular: brain disease, spinal cord disease (spina bifida), spasticity of the sphincter with out definite neurological signs.

The prognosis is unfavorable, the patient succumbing to renal insufficiency and infection. Diverticula were found in three of the cases reviewed.

all those of young boys, one of whom was only 8 months old. The diagnosis is readily made by cystoscopy. Resection and transplantation of the ureter was necessary. In the series of ninety four cases of kidney disease, fifty operations were performed with a mortality of 70 per cent. Thirty of these were nephrectomies and the rest pyelotomies, nephrotomies, decapsulations, and exploratory operations.

The author draws the following conclusions:

Diseases of the urinary tract in children are more frequent than we have been led to believe. With few exceptions the lesions are as varied as in adults. In a large percentage of cases developing pyuria the underlying factor is an anomaly of the urinary tract. The feasibility, safety and practical value of cystoscopy in the young are well demonstrated by the cases reviewed. When present day methods are properly applied, it is seldom necessary to resort to exploratory operation. The diagnosis of diseases of the urinary tract in children should be made in the cystoscopic room rather than, as happens so often, in the postmortem room. HARRY A. FOWLER, M.D.

MacKenzie, D. W. Malignant Growths of the Lower Urinary Tract. *Boston M. & S. J.* 1926. ccv. 811.

The most important bladder tumors are composed of masses of epithelial cells of one type or another and are generally known as papillary epitheliomata and papillary carcinomata. These may be benign or malignant. Cases of malignant tumors are characterized by induration, sloughing, and resistance to fulguration. As a rule the malignant tumor is single.

Hæmaturia is an important sign necessitating a thorough investigation. Of a series of 821 cases of hæmaturia, the condition in 70 per cent was due to calculi, tumors, and surgical infections of the kidney. Of 140 cases of malignancy, hæmaturia was the chief complaint in 75 per cent. As vesical carcinoma is a local disease and often remains local for a long time, its rational treatment consists in complete and radical excision. Every effort should be made to bring such cases for early examination and treatment before the involvement becomes general. On account of the ease with which cancer cells grow on denuded surfaces great care must be exercised in operating on vesical tumors suprapubically not to rub or sponge off the tumor cells.

Cancer cells contain the secret of cancer growth but must have for tumor growth the essential response of the host to furnish stroma and vasculature to permit them to organize and grow. If this response fails the lesion remains carcinoid or disappears entirely. CLAUDE D. HOLMES, M.D.

Mann, L. T. The Results of X-Ray Therapy of Malignant Growths of the Urinary Tract. *Surg. Gynec. & Obst.* 1926. xlii. 529.

The author gives in detail a summary of the results obtained in cases of malignant disease of the urinary tract treated with deep X-ray therapy alone, by surgical procedures and X-ray irradiation, by radium and X-ray irradiation, and by a combination of all three procedures. Some of the cases were treated in the Mt. Sinai Hospital, New York, others at other hospitals and others in private practice. The technique was essentially the same in all, high power machines with proper screening being used. The term "course" is used to signify a full erythema dose received at the site of the malignancy.

In the first group of cases, eleven of malignant growths of the kidney, postoperative treatment with the X-ray did not show any better results than were obtained in a similar group of cases in which only surgical treatment was given.

The second group consisted of seventeen cases of carcinoma and two of papilloma. In only three of these was there any relief of the dysuria, hæmaturia, etc. Life was not prolonged, and there were no cures.

The series of prostatic carcinomata treated by deep therapy included twelve cases. In two the dysuria, hæmaturia, and frequency were relieved for some time, while in the ten others there was only temporary relief or none at all. Life may have been prolonged, but there was no decrease in the size of the tumor mass.

The author draws the following conclusions:

1. The cure of malignant growths of the urinary tract by deep X-ray therapy is a very infrequent occurrence.

2. Alleviation of the symptoms occurs almost as infrequently as a cure and in most cases is only temporary.

3. There seems to be a greater prolongation of life in cases treated by deep X-ray irradiation than in cases not so treated. CLAUDE D. HOLMES, M.D.



# SURGERY OF THE BONES, JOINTS, MUSCLES TENDONS

## CONDITIONS OF THE BONES JOINTS MUSCLES, TENDONS ETC

Krasnobajev T P The Treatment of Acute Haematogenous Infectious Osteomyelitis (Über Behandlung der akuten haematogenen Infektion O steomyelitis) *Vot vy chirurgicheskij archiv* 1925 VIII 354

At the seventeenth Russian Surgical Congress held in Leningrad in 1925 the author discussed the principles of the treatment of acute osteomyelitis and reviewed the results he had obtained in cases of this condition in the last twenty years

The treatment should be as conservative and as simple as possible In the acute initial stage, radical operative measures and general narcosis are contra indicated Operation must be limited to incision of the soft tissues to the periosteum under local anaesthesia In severe septic cases this incision must be made before fluctuation is demonstrable In mild cases simple aspiration by puncture may be sufficient Tamponade is contra indicated but occasionally drainage with counter openings may be established for a short time Following such treatment more extensive operative measures may be not only unnecessary but actually harmful

Care must be taken to improve the general condition and to spare the tissues in the operative field In epiphyseal osteomyelitis complicated by suppurative inflammation of the joints more extensive operative measures are indicated However in the cases of small children it may be necessary to restrict the treatment at first to simple aspirations In cases in which aspiration is insufficient in severe cases in older children and in cases in which the pus has broken through the capsule wall and has led to the formation of a phlegmon arthrotomy should be done Tamponade is contra indicated Resection is indicated in epiphyseal osteomyelitis only in cases of hip disease with gangrene and complete separation of the head of the femur After the sepsis has subsided early necrotomy with removal of all visible dead bone must be performed without waiting for the formation of an involucrum The operative wound must then be sutured If the proper postoperative care is given amputation and exarticulation are rarely necessary

The author reports his experience in 428 cases of acute osteomyelitis in children under 13 years of age There were ninety six deaths a mortality of 22.4 per cent The highest mortality 22 per cent was that of the group of 127 children under 2 years of age

The osteomyelitis involved the thigh and leg in 148 cases (forty eight deaths) the head of the

femur in ten cases (one death) the ilium in twenty cases (eight deaths) the scapula in seventeen cases (recovery in all) and the epiphyses in 127 cases Epiphyseal osteomyelitis involved the hip joint in sixty nine cases (sixteen deaths) the knee joint in thirty five (two deaths) the shoulder in ten cases (two deaths), the ankle in nine cases (no deaths) the elbow in two cases (one death) and the hand in one case (recovery) In the one case of involvement of the tibial epiphysis without involvement of the knee recovery resulted

Aspiration of pus by puncture was done in nineteen cases (chiefly cases of hip and knee involvement) with one death Incision or arthrotomy were done in ninety one cases with fifteen deaths Resection of the hip joint was done in eleven cases with five deaths

Of sixty four cases of epiphyseal osteomyelitis in which bacteriological examinations were made cocci in chains were found in thirty six (streptococci in sixteen cases and diplococci in twenty) In this group the mortality was 16 per cent whereas in twenty seven cases of staphylococcal infection the mortality was only 10.7 per cent ALIPOV (2)

Meyerding H W Chronic Infectious Arthritis with Multiple Ankylosis of Joints and Complete Disability *Surg Clin N Am* 1926 VI 1301

A woman aged 30 years had been bedridden for five years with polyarticular arthritis The left hip both elbows both wrists and the left thumb were ankylosed in deformed positions Within a period of eleven months three arthroplasties a Soutter operation an osteotomy at the base of the thumb and a disarticulation of a hammer toe were performed At the end of that time the patient was able to walk with crutches and braces and to do useful work with her hands

Seeliger The Pathological Physiology of the Joints The Formation of Joint Mice (Zur pathologischen Physiologie der Gelenke Gelenkmausbildung) 50 Tag d deutsche Ges f Chir Berlin 1926

In a study to determine the still unknown factor in the etiology of arthritis deformans the formation of joint mice and other joint conditions the author paid particular attention to the synovia Ninety seven per cent of the latter is fluid and 3 per cent is solid substances The latter are in colloidal solution and are mucin like bodies cell structures from the inner surfaces of the joint In inflammatory conditions the cellular content is increased The reaction is alkaline ( $P_H=8.4$  ions) In cases of arthritis deformans arthropathies and free bodies in the joints the alkalinity is reduced ( $P_H=7.8$  ions)

flakes appear, and the coagulation point is reduced. The author sees in such changes in the synovia one of the causes of the conditions mentioned.

The flaking and the reduction in the alkalinity cause a dry synovitis leading to changes in the cartilage which may advance to necrosis, as described by Axhausen. Traumatic hæmorrhages with the elimination of fibrin also indicate a reduction in the alkalinity, and lead secondarily to organic changes.

These theories were proved by the author in experiments on animals. When the synovia was normal, organic substances injected into the joints were absorbed without causing any damage where, as when the alkalinity was reduced they produced the changes noted in arthritis deformans. Trauma also caused a shifting toward acidity which led to a decrease in resorption and marked changes.

In the discussion of this report BIER stated that he had always emphasized the importance of the synovia but was thinking more of its hormonal than its colloidal action. STETTNER (Z)

**Loehr W Ischæmic Contracture** (Ischaemische Contractur) 50 Tag d deutsch Ges f Chir Berlin 1926

The first stage of ischæmic contracture resembles the cold congestion of Bier which is characterized by swelling coldness of the skin bluish discoloration with possibly the formation of vesicles and more or less marked disturbance of sensation. Primary nerve and vascular injuries are not always present. On the other hand, Loehr always found a marked hæmatoma which, because of its diffuse coagulation in the tissues could not be moved and therefore under the tense fascia and skin, and especially under the plica cubitalis which has little elasticity acted as an obstruction to the circulation. Supracondylar fracture differs from dislocation of the elbow in the fact that in the latter the hæmatoma extends posteriorly and is therefore less apt to cause ischæmic contracture.

In the author's opinion the cause of ischæmic contracture is the obstruction to the outflow of blood caused by a subfascial or subcutaneous hæmatoma. The clinical and anatomical findings in the muscles and nerves are secondary.

In experiments on dogs rabbits, guinea pigs, rats and mice it was found that the production of similar conditions resulted in ischæmic contracture with all of the subsequent changes noted in man. Cross sections of the legs of the animals showed that the highly sensitive muscles were necrotic especially in the center of their muscle bellies as were also the small nerves and the vascular nerves running in these muscles but there was no thrombosis. On the other hand the interfascial connective tissue and the large nerve and vascular branches embedded in it formed a peripheral belt surrounding the muscle bellies which were necrotic in their centers. Accordingly there was here an active regenerative process. Because of the secondary injury of the vessels and nerves the replacement of muscle is very gradual.

A guide for the treatment is found in the cause of the condition. When ischæmia impends the hæmatoma must be removed at once in order to overcome the obstruction to the circulation before the development of paralysis.

Subsequent examinations of a series of patients with supracondylar fracture who were operated upon showed a very good functional result. Even in late cases treatment must not be neglected. All measures should be used which will improve the circulation in the muscle and stimulate the nerves to function. STETTNER (Z)

**Hickey P M X Ray Clinic on Lesions of the Vertebrae** Ann Clin Med 1916 v 95

Hickey calls attention to the fact that roentgen ray studies of the vertebrae may establish (1) normal density and normal contour of the vertebrae under consideration (2) decreased densities indicating a subtraction of the calcium content, which may or may not be accompanied by changes of contour from the usual normal, (3) an increase in density indicating additions to the calcium content of the vertebrae with or without changes in



Fig 1. Roentgenogram of Case 7. Definite union of the third and fourth lumbar vertebrae. Lateral film showed no angulation. History and X ray findings suggest complete healing of a tuberculous or infectious process.

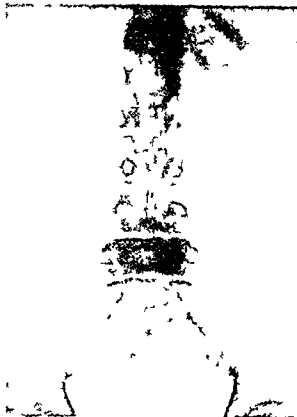


FIG. 2. Roentgenogram of Case 8. Osteomyelitis of the fifth lumbar vertebra secondary to primary infection of the right scapula.



FIG. 3. Roentgenogram of Case 9. Charcot spine with involvement of the second, third, fourth, and fifth lumbar vertebrae. The extra density in the area of the fourth and fifth vertebrae was caused by iodized oil injected into the spinal canal. The painless lesion was discovered when lumbar puncture was attempted.

configuration. All deductions as to the presence or absence of a pathological condition must be based on such findings.

This article reports fourteen cases of lesions of the spine in which a roentgen ray examination was made and the findings were carefully checked. Most of the case histories are supplemented with roentgenograms.

Cases 1 and 2 illustrate types of compression fractures due to trauma. In the anteroposterior roentgenogram of Case 1 there was superimposition of the shadow of the body of the first lumbar vertebra on the shadow of the body of the second lumbar vertebra with obliteration of the intervertebral space. A lateral film showed a triangular appearance with the apex of the triangle anterior. These findings are characteristic of a compression fracture with an attempt at immobilization through the irritation from displacement. In Case 2 the anteroposterior film did not offer conclusive evidence of the nature of the lesion, but definite evidence of a mild type of compression fracture of the eleventh thoracic vertebra was supplied by the lateral projection.

Cases 3, 4, 5, and 6 were cases of tuberculosis of the spine. In Case 3 the roentgenogram showed

coalescence of the seventh and eighth thoracic vertebrae and the shadow of an abscess on either side. In Case 4 the anteroposterior roentgenogram showed definite loss of the intervertebral space between the twelfth thoracic and first lumbar vertebrae and the lateral projection showed slight involvement of the anterior and upper edge of the second lumbar vertebra, almost complete disappearance of the body of the first lumbar vertebra and definite destruction of the lower border of the twelfth thoracic vertebra. In Case 5 both the anteroposterior and lateral projections showed involvement of the fifth lumbar vertebra. Case 6 demonstrates the difficulties in drawing conclusions entirely from decreased density. The appearance was that of metastasis rather than tuberculosis although the latter was suggested by the clinical history. A search was made for a primary growth but none was found. The lateral film showed definite destruction of the body of the seventh cervical vertebra and definite thickening of the prevertebral tissues. Operation revealed destruction of the seventh cervical vertebra with definite caseous material.

In Case 7 the anteroposterior and lateral projections showed definite fusion of the third and fourth lumbar vertebrae and the lateral view showed no angulation. Five years previously the patient had what was thought to be Pott's disease, but it may have been an infectious arthritis.

Case 8 was a case of osteomyelitis of the fifth lumbar vertebra secondary to osteomyelitis of the right scapula. The anteroposterior projection showed a decided change in the contour and density of the fifth lumbar vertebra and loss of the intervertebral space between the fourth and fifth lumbar vertebrae.

Case 9 was a case of Charcot spine. There were no symptoms referable to the spine, but Hickey has noted that in tabes the X-ray examination frequently reveals structural changes in the spine which were not suspected from the clinical history. The destructive lesion involved the second to the fifth lumbar vertebrae. There were areas of increased and of decreased density and a definite change in contour.

Case 10 was a case of osteoclastic metastasis of carcinoma of the breast. The roentgenograms showed a decrease in density of the eighth and twelfth thoracic vertebrae and apparent telescoping of the vertebral bodies.

Cases 11 and 12 were cases of the osteoblastic type of metastasis of carcinoma of the prostate. In Case 11 the malignancy was first manifested late in life and the involvement of the spine was limited to the third lumbar vertebra. In Case 12 the condition began at the age of 44 years and the spinal metastases involved all of the lumbar vertebrae and the pelvic bones. There was an irregular mottling indicating subtraction and addition of lime content. This is typical of the osteoblastic type of carcinoma secondary to carcinoma of the prostate.

Cases 13 and 14 were cases of multiple myeloma. The roentgenograms showed the multiple circumscribed areas of lessened density which are pathognomonic of the condition. CHARLES H. HEACOCK, M.D.

**Konjetzny** A Contribution to Our Knowledge of Perthes and Koehler's Disease (Zur Kenntnis der Pertheschen und Koehlerschen Krankheit) 50 Tag d. deutsch. Ges. f. Chir. Berlin 1926

Following a study of fifteen cases of Koehler's disease, two cases of Perthes' disease, eight cases of necrosis of the semilunar bone and numerous cases of so-called osteochondritis of the knee and elbow, the author agrees with Axhausen that in the group of diseases mentioned we are dealing with a subchondral epiphyseal necrosis with little or no destruction of cartilage. He demonstrated this in the roentgenogram and specimen obtained in a case of Perthes' disease in a 17 year old boy in which the head of the bone was resected. Along the anterior saw cut there was an extensive subchondral necrosis resembling an infarction. The microscopic picture also showed complete bone and marrow necrosis with a well defined margin.

The author has seen similar more or less wedge shaped subchondral necroses of the epiphyseal bone and marrow also in Koehler's disease. Axhausen has called attention to the fact that, under favorable conditions, a gradual replacement of the necrotic tissue by the living surrounding tissues may occur and result in ideal healing. The author observed this in the case of an 11 year old boy with disease of the first metatarsal which was treated by the application of supporting bandages and was regularly controlled by X-ray examinations. In this case resection of the head of the bone was not done, but a small section 5 mm. thick was trimmed off parallel with the axis of the metatarsal. The author attributes to this method the ideal regeneration of the severely disorganized metatarsal head and believes that the necrotic tissue and segment of the head which is contiguous to the normal portion of the epiphysis and the femoral neck should be removed also in Perthes' disease.

Konjetzny was able to study the outcome of severe Perthes' disease in the case of a patient who was under observation for eight years and ultimately died of tuberculosis. This case demonstrated the gradual healing of the disease under conservative management but shows also that even after eight years complete healing had not occurred, since surrounded by exuberant masses of cartilage, necrotic bone fragments were found in the form of sequestra although the major portion of the extensive epiphyseal bone necrosis which was visible in the first X-ray plates had become absorbed and replaced. Such residual necroses, which are observed frequently also in old cases of Koehler's disease, may be a source of continuous irritation leading ultimately to a typical secondary arthritis deformans. The beginning of the latter condition was noted in some of the author's specimens.

In conclusion the author discusses the question as to whether the operative treatment mentioned may not hinder the formation of such inclusions of dead bone in the exuberant cartilage so that truly complete healing may occur under otherwise conservative treatment. STETTNER (Z).

**Juengling O.** The Results of the Roentgen Treatment of Bone and Joint Tuberculosis in the Region of the Foot (Ergebnisse der Roentgenbehandlung der Knochen und Gelenktuberkulose im Bereich des Fusses) Acta radiol. 1926 VII 14

In the surgical clinic at Tuebingen, sixty four cases of tuberculosis of the foot were treated with the X-rays during the period from 1917 to 1924. In thirty six the condition involved the tarsal joint, in twenty one the metatarsal bones, and in seven the toe joints. Twenty four cases were of the spongy type and in forty there were sinuses. Thirty five of the sixty four patients were children.

According to the dosage used, the cases may be divided into two groups. One group was treated before the autumn of 1919 with strong doses, and the other group was treated since then with weak

doses. The first group included thirteen cases, seven of which were children and the second group included fifty one cases twenty eight of which were children. The results are shown in the table. The numbers in parentheses indicate the cases in children.

#### Cases Treated Before 1919 with Strong Doses

	No. active Benighted	Still trying	Aggravated	Total
Metatarsals	4 (3)			4 (3)
Tarsal joint	3 (2)	1 (1)		9 (4)

#### Cases Treated Since 1919 with Weak Doses

	No. active Benighted	Still trying	Aggravated	Total
Toe joints	6 (4)	1 (1)		7 (4)
Metatarsals	14 (8)	2 (2)	1 (0)	17 (10)
Tarsal joint	15 (9)	10 (5)	2 (0)	27 (14)

The prognosis of tuberculosis of the toe joints and the metatarsals treated with the X rays may be considered favorable and as good in adults as in children and in closed conditions.

More than half (55.5 per cent) of the cases of tuberculosis of the tarsal joint could be transferred to the non active group. The fistulous cases that went on to the non active stage were much more numerous among the young subjects than among the adults whereas the cases of the spongy type which showed similar improvement were equal in number among the adults and young subjects.

The results obtained from treatment with weaker doses were far better than those obtained by the strong doses. In nine cases treated with strong doses there were three recurrences and four amputations. In the group of twenty seven cases treated with weak doses there was practically no instance of lighting up of the infection and amputation was necessary in only two.

Abscesses should be opened. The injection of iodiform does not seem to have any bearing on the prognosis. Attention to the general health, fresh air, sunshine and nourishing food is of importance.

The X ray treatment of tuberculosis of the joints of the foot should never be undertaken without simultaneous orthopedic treatment. As ambulatory treatment the author recommends the application of plaster of Paris bandages or the use of some apparatus that will take the weight from the affected joint. The apparatus must be used even after the condition has reached the latent stage.

It is advisable to try radiation in every case of tuberculosis of the foot joints. In serious fistulous cases in laborers however care must be taken not to delay operative interference too long when two treatments by irradiation are not followed by definite improvement.

### SURGERY OF THE BONES JOINTS MUSCLES TENDONS ETC

Layr. Plastic Operations on the Large Ball and Socket Joints (Plastik an den grossen Kugelgelenken) 50. Tag d. deutsch. Ges. f. Chir. Berlin 1916.

Pavri discusses plastic operations on ball and socket joints the myodynamic demands of which are

much more difficult to meet than those of the more fixed joints as they require an interplay of muscles in three axes.

In the case of the shoulder it is usually necessary because of the unsatisfactory results of plastic operations to be satisfied with movement of the entire shoulder girdle but in the position of adduction this is not sufficient. Accordingly a successful plastic operation is desirable especially for laborers and young persons. When the loss of substance and muscle defects are extensive the difficulties are insurmountable. Resection of the head of the humerus leaves a shoulder joint without sufficient accuracy of motion or direction.

The insertions of the scapular muscles endowed with little power of rotation are crowded together in one small area. Therefore in ankylosis adhesions are formed with them. Marked induration occurs at certain points the bursa become obliterated and the subscapularis becomes contracted.

A good exposure without permanent injury of the muscles is difficult. In mild cases the half Langenbeck with chiseling off of the major tuberosity is sufficient and permits bloodless stretching of the subscapularis. When the ankylosis is broken up from above the osteoplastic liberation of the deltoid origins from the clavicle and scapula makes it possible to preserve all of the muscles attached to the tuberosity. These as well as the newly formed head must be covered by the fascia. Early passive motion in all three axes is necessary for a successful result. When a plastic operation is contra indicated in rigidity of the arm in adduction arthrolysis or a wedge osteotomy at the surgical neck followed by support of the arm should be done. The author reports a case in which a very excellent result was obtained by a plastic operation.

In the hip the outlook as regards both movement in general and movement in the joint is more favorable. The removal of the greater trochanter is better than the liberation of the muscle insertions and opens up the joint like a key. The points at which the vessels enter the trochanteric fossa must be preserved for the sake of the blood supply of the neck and head of the femur. A plastic operation on the joint and a pseudarthrosis in the neck of the femur near the joint are antagonistic. In osteoplastic by peritrophic conditions in which the femoral neck is club shaped it is best to perform a saddle osteotomy at the neck of the femur and cover it with fascia whereas when there is a slender fixed head the plastic operation is best. With proper instruments a very good head and acetabulum may be refashioned.

In cases of marked atrophy of the bone pseudarthrosis is more apt to be successful even though only flexion and extension are regained. The plastic operation on a ball and socket joint demands in addition to bandaging of the limb in adduction for from four to six weeks early movement in three axes and measures to prevent adduction and flexion contracture. These positions are difficult to correct later.

Some joints subjected to a plastic operation are transformed by absorption of the head into saddle joints, whereas others retain a good form. Well functioning pseudarthroses with free flexion and extension are often without a Trendelenburg sign, but the limping is not always due to insufficiency of the small gluteal muscles, being caused also by flexion and adduction contractures. In bilateral ankylosis the right side should be operated upon first.

Of thirty five ankyloses of the hip, nine of which were fibrous, a very good or good result was obtained in 66 per cent. There were two deaths (one due to fat embolism and the other to coronary sclerosis), in twenty plastics, and thirteen saddle pseudarthroses.

In the discussion of this report SCHANZ (Dresden) stated that he has mobilized a large number of ankyloses in a similar manner (interposition of a fat pad), but the heads of the bones wore off and he regards it as doubtful whether the modeling of a new head is worth while. As the results of subtrochanteric osteotomy in hip joint ankylosis are good, he performs this operation in a large number of cases.

WULLSTEIN (Essen) reported that he has often exposed the shoulder joint by Payr's method and finds that the procedure gives good exposure. In the hip he has effected a saddle pseudarthrosis which has been done frequently also by Payr. In Wullstein's opinion, the cause of resorption of the head is generally to be sought in injury to the blood vessels. STETTNER (Z)

**Whitman, A.** Remarks Prefatory to a Cinematographic Presentation of Late Results of the Reconstruction Operation. *J. Bone & Joint Surg.* 1926 viii 803

The reconstruction operation on the hip is an operation of necessity rather than of election as it is usually done as a last resort. The two chief indications for which it is performed are ununited fracture of the neck of the femur and arthritis deformans of the hip. The results to be achieved are relief of pain, stability of the joint, and mobility of the joint.

The reconstruction operation is a more certain procedure than bone grafting or pegging because in patients of the class subjected to it the power of bone regeneration which is so essential to bone grafts is usually very low.

In arthritis deformans the aim is to relieve the pain by shaving off the cartilage and margin of the femoral head thus reducing the size of the head so that friction with the acetabulum is diminished. Transplanting the trochanter downward in such cases tends to prevent the troublesome flexion adduction deformity.

An incision in the shape of a half U is begun an inch below and behind the anterior superior spine and continued across the femur at a point about 3 in. below the apex of the trochanter. The base of the trochanter is then separated from the shaft with a wide chisel and turned upward with its muscle attachments. The capsule is opened and the greater

part of the head is removed with a curved chisel. In order to excise all of the diseased bone it may be necessary to remove all of the head. The remaining stump is smoothed off carefully with a file but not covered with membrane. A thin section of bone is shaved off the shaft just below the site of the trochanter and the trochanter pulled down and fastened to this freshened shaft with deep sutures or a bone screw. A spica is then applied with the thigh extended and abducted. This is left on for several weeks.

Of greatest importance in the after treatment is the maintenance of the limb in abduction and hyperextension in order to overcome the tendency toward the flexion adduction deformity.

From 1916 to date about eighty reconstruction operations have been done at the Hospital for Crippled and Crippled, New York. Of the first forty patients subjected to it, twelve reported back for follow up study. Four who were operated upon for ununited fracture showed an average flexion of 44 degrees, abduction of 10 degrees, and 1 in. of shortening. Five who were treated for arthritis deformans had an average flexion of 46 degrees, abduction of 11 degrees and  $\frac{1}{2}$  in. of shortening. Both groups were free from pain and all but one had returned to their normal activities.

Most of the surgeons discussing this report stated that they preferred the reconstruction operation to bone grafting or arthrodesis.

The article contains twenty five cuts showing the results of the procedure. WILLIAM A. CLARK, M.D.

**Abbott, L. C.** The Correction of Deformity in Quiescent Disease of the Hip. *J. Am. M. Ass.* 1916 lxxvii 1095

Abbott describes the methods used for the correction of deformity in quiescent disease of the hip at the Shriners Hospital for Crippled Children, St. Louis. The cases are divided into two groups, those in which the deformity was corrected without ankylosis of the hip and those in which it was corrected with ankylosis. Three cases of each type are reported.

In the first group the deformity was corrected and the shortening reduced by division of the contracted soft parts followed by skeletal traction for several weeks until the maximum correction was obtained. Arthrodesis of the hip was then done by cutting a notch between the upper surface of the remaining portion of the neck and the inner surface of the great trochanter, accurately fitting this denuded area against the upper part of the acetabulum and the adjacent wing of the ilium and reinforcing the area of contact with bone chips.

In the group of cases in which the deformity was corrected with bony ankylosis the joint was ankylosed in flexion abduction and external rotation. To avoid the complications of the usual subtrochanteric osteotomy of the femur in such cases, a new method was employed which combined a transverse subtrochanteric osteotomy with gradual

correction of the deformity to allow the fragments to become embedded in soft callus. When this was done the gradual bending at the site of deformity could be done without the risk of displacing the fragments. *J. A. L. C. COLONNA MD*

### FRACTURES AND DISLOCATIONS

**Henderson M S** The Cause and Treatment of Ununited Fractures. *South M J* 1926 11: 746

It is difficult to assign a definite cause for delayed union or non union in any given case of ununited fracture. One or more factors may be responsible such as devitalizing trauma the interposition of muscle or fascia with extensive overriding in adequate reduction improper apposition of fragments interference with the blood supply and too early weight bearing or resumption of function.

The work of Robinson and his coworkers appears to have sufficient basis on which to build a reasonable hypothesis to explain the apparent interference with the normal processes of ossification. This theory is based on the presence in the osteoblasts and hypertrophic cartilage cells of an enzyme (phosphoric esterase) which acts on the phosphoric esters of the blood. It has been shown that amino acids such as would be formed by the autolysis of dead tissue or hematoma decalcify the bone appreciably and thus tend to reduce the amount of the enzyme present. The enzyme is inhibited in its action by an acid medium. The fact that this unfavorable influence on ossification does not occur in all cases of fracture is not proof that it cannot happen in some.

If this careful experimental work can be accepted fractures produced by severe injuries with consequent serious trauma to the soft parts should be regarded with suspicion. It is reasonable to argue that such fracture should be opened and cleaned of the damaged tissue and hematoma accurate reduction should be obtained and a dry field secured.

The massive bone graft is the method of choice in cases of non union and leads to a higher percentage of cures than any other method. In delayed union good results are obtained in a large percentage of cases by any method which exposes the fragments realigns them and maintains good apposition.

**Edwards H C** The Mechanism and Treatment of Backfire Fracture. *J. Bone & Joint Surg* 1926 viii 701

This report is based on forty two cases of backfire fracture which have been treated at the Kings College Hospital London since its institution in 1920.

Backfire fractures may be divided into two groups the direct which result when the starting handle of the automobile flies out of the hand and strikes the forearm, and the indirect which occur when the handle does not leave the hand. The fractures are of the following types

1. Fracture through the base of the styloid process of the radius with or without involvement of the styloid of the ulna. This may be either an abduction or an adduction fracture.

2. Colles fracture due usually to indirect violence but occasionally caused by direct force.

3. High Colles fracture due probably to direct violence and occurring from  $1\frac{1}{2}$  to  $2\frac{3}{4}$  in above the lower end of the radius.

4. High fracture through the radial shaft at the juncture of the middle and lower thirds due almost certainly in all cases to indirect violence.

5. Fracture of the styloid process of the radius and the inner and posterior margin of the radial articular surface.

6. Separation of the radial epiphysis.

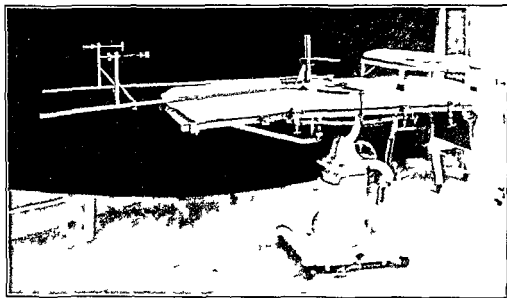
7. Mixed fracture involving the carpal and meta carpal bones.

In the treatment of a Colles fracture at the Kings College Hospital reduction is often effected by manipulation under anesthesia by the method of Sir Robert Jones care being taken to increase the deformity before attempting to restore the fragments to the correct alignment. Particular attention is paid to the correction of the backward tilt of the lower fragment. After the reduction, a Carr splint is applied. Edwards considers the Carr splint most satisfactory as it is cheap easily made does not hamper the movement of the fingers and being wooden permits X ray examination. The palmar flexion is adjusted according to the requirements of the particular case. Massage and active and passive movements are begun after the callus uniting the fragments has become sufficiently firm. In the average case this usually requires at least fourteen days.

Open operation is indicated in these cases when several attempts to reduce the fracture by manipulation have failed and when in old fractures the wrist is weakened by an uncorrected backward tilt. If the callus between the fragments is soft it is cut through. Any irregularities likely to prevent reduction are then removed and the fragments are brought to gether in good position.

If the fracture is old and firm bony union has taken place an osteotomy through the malunited fracture is necessary. In the procedure which has been found most satisfactory the bone at the site of the fracture is cut through with a curved gouge and the surfaces of the fragments are so fashioned that the upper surface is convex and the lower surface concave the one fitting accurately with the other. In this way a false ball and socket joint is made. The distal fragment is then rotated forward so that the backward displacement is eliminated and the radial articular surface faces forward at right angles to the long axis of the radius. No plate is necessary. The periosteum is stitched over the fracture and the skin incision closed. The forearm is then put up in the corrected position on a Carr splint.

In fracture high up on the radial shaft the lower fragment is carried backward with the carpus and



Clark — 1 Light Portable Extension Frame

the extreme upper lip of the lower fragment may be displaced in front of the proximal fragment. On account of the size of the fragment, the correction of the backward displacement is readily effected under anaesthesia. A Carr splint or a posterior angular and a short anterior splint are then applied. Open operation is necessary when there is a marked and irreducible overlap and in old cases in which the backward tilt is uncorrected and will not yield to manipulative methods. In such cases the use of a Lane plate may be necessary. After the operation a Carr splint or a posterior angular and a short anterior splint extending from the wrist to the bend of the elbow are applied.

In fractures through the lower epiphysis reduction is attempted as for a Colles fracture. Because of the danger of displacing the lower fragment early massage and movement are contra indicated until satisfactory union has taken place. As soon as the swelling attendant upon the fracture has subsided a plaster splint is used. In the cases of young adults the plaster is removed and massage and movement are begun after three weeks. In the case of a child the arm is allowed to go free after immobilization for a month. If reduction cannot be effected by manipulation, operation is performed. The use of a plate

is to be avoided in these cases. A Carr splint is applied and replaced by plaster of Paris when the sutures are out.

RUDOLPH S. REICH, M.D.

Clark, W. A. A Light Portable Extension Frame  
*J. Bone & Joint Surg.* 1926, VIII, 750

Clark describes a frame for obtaining extension of the leg in the reduction of fractures or the application of a cast for any hip or leg trouble. This frame was designed for use in the patient's home or in hospitals where a Hawley or Albee table is not available.

It weighs only 20 lbs. and can easily be carried in one hand. It consists of a central piece which is clamped on the operating table and two steel pipes extending out to hold the foot pieces. The foot piece is similar to that of the Hawley table, but much lighter. The central piece is made mostly of gas pipe and is shaped approximately like a half circle which lies across the table and is held by two adjustable clamps reaching down under the edge of the table top. There are two upright non detachable perineal bars set 1 in. apart. Clamps on the perimeter of the central piece hold the extension rods in abduction. The foot piece is held on the extension rod by a friction clutch, and extension is increased by a thumb screw.



# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

Fry H J B and Shattock C E Sarcomatous Permeation of the Inferior Vena Cava and the Right Side of the Heart *Brit J Surg* 1926 xiv 337

The authors report in detail a case of intravascular sarcomatous growth of extraordinary formation

The patient was a primipara aged 19 years who had been recently delivered normally of a full term child Ten days after labor she complained of patches of numbness There was numbness in the right leg from the hip to the knee but none at all on the left side Later severe pains developed in the back and the temperature became irregular Four months after the delivery of the child pelvic examination revealed a large hard mass projecting forward from the sacrum and the X ray showed a large irregular shadow of the density of bone which was superimposed on the sacral promontory Laparotomy revealed a large hard tumor growing from the sacrum Section of a piece showed it to be an ossifying chondroma without malignant changes

After the operation the patient's general condition gradually became less favorable and an enormous oedema of both lower limbs and vulva developed Death with uræmic symptoms resulted twelve months after the birth of the child

Autopsy revealed arising from the sacrum a smooth firm growth with a slightly nodular surface the limits of which could not be defined The inferior vena cava was greatly distended being a rounded emulsoid pillar extending from the juncture of the common iliac veins to the lower surface of the diaphragm It appeared to be completely thrombosed The common iliac veins on both sides were involved and compressed by the growth The lumen of the inferior vena cava was occupied by a firm whitish gristly mass which extended through the right auricle into the right ventricle and passed out as a solid cord through the pulmonary valve into the pulmonary artery Death was due apparently more to uræmia than to the growth or its immediate effects

Microscopic section of the growth in the inferior vena cava showed a layer of well formed cartilage cells with minute traces of calcareous deposit at certain points and small isolated nests of sarcomatous cells

The growth present in the vascular system as a solid mass was not less than 53 cm long and its average diameter was 5.5 cm

The enlargement of the veins of the anterior abdominal wall which Weber noted in thrombosis of the inferior vena cava was not a feature in this case

JACOB S GROFF M D

## BLOOD, TRANSFUSION

Mayo W J Dyscrasias of the Blood *New Orleans M & S J* 1926 lxix 290

The author discusses briefly certain fundamental changes in the blood plasma due to the excessive accumulation of catabolic substances the result of normal as well as abnormal metabolism which must be eliminated from the body These disturbances are associated with alteration of the normal degree of alkalinity of the fluids of the body The necessity for sodium chloride and a trace of iodine in the body has been handed down from our marine ancestors

The normal balance of the constituents of the blood is in part maintained by excretions among which are the urinary, intestinal and biliary excretions Interference with any of these excretions upsets the alkali acid balance and produces the condition of alkalosis or acidosis associated with the retention of urea and creatinin and a disturbance of the concentration of chloride in the blood

The function of the kidney is briefly described and reference made to Cushny's hypothesis All forms of chronic nephritis and nephrosis are not necessarily dependent on infection If urinary drainage is interfered with as by pressure or obstruction the stage is set for more serious disturbances in the constitution of the blood which will quickly result in death if the condition is not relieved The blood urea and creatinin increase and the heart becomes weak If large quantities of a normal solution of sodium chloride and an easily digestible carbohydrate diet are given and if in addition a 10 per cent glucose solution is injected intravenously as suggested by Matas the patient will be so far restored to health that operation for correction of the obstruction may be undertaken By these methods the mortality following operations for enlargement of the prostate has been remarkably reduced

In the condition known as high intestinal obstruction whatever its cause there is also a disturbance of the normal alkalinity of the blood and the production of alkalosis Urea is retained and its concentration in the blood rises as does that of creatinin Marked dehydration is due largely to the vomiting The blood chlorides decrease as much as 50 per cent When the alkalosis is marked tetany may result

Jejunostomy is a fairly reliable remedy but the chemical disturbance can be corrected in a surprisingly short time by the intravenous introduction of solutions of sodium chloride and glucose Reference is made to the work of Walters in demonstrating that neither chlorides nor water alone will produce this result they must be combined in propor

tions approximating the physiological concentration. As a result of these methods, operations on the stomach and duodenum have been performed with a notable decrease in the mortality.

When bile circulates in the blood as in jaundice, the bile acids and pigments combine with the plasma. In certain patients there may be purpuric manifestations and acidosis. With fixing of the calcium there is interference with the normal coagulability of the blood. This conception has led to the administration of calcium chloride before operations in the presence of jaundice. A carbohydrate diet with large quantities of fluid is given sometimes combined with the intravenous administration of glucose. In the presence of acidosis sodium bicarbonate rather than calcium chloride should be used. In many cases transfusions of blood are necessary.

**Speese J. The Surgical Aspect of Blood Dyscrasias**  
*Ann Surg* 1926 lxxvii 477

Speese discusses certain forms of splenomegaly which are accompanied by disease of the blood and in which the attempt is made to cure or arrest the condition by removal of the spleen. The various functions of the spleen are cited. While the effect of the removal of the spleen has been studied extensively in animals and in cases of splenic rupture, Speese emphasizes that these observations have been made on healthy individuals and that when the spleen is removed for definite pathological processes the findings are very different.

With regard to pernicious anaemia attention is called to the insidious onset of the condition with pallor, achlorhydria, and gradual loss of strength. Glossitis is an early symptom. Speese is of the opinion that infection is a factor in the etiology. The improvement following splenectomy has been far greater than that produced by transfusion or other palliative methods.

Hæmolytic jaundice is characterized by splenic enlargement, an icteric tinge of the skin and sclera, absence of bile in the urine and the presence of bile in the stools. One of the most important findings is increased fragility of the red blood cells. The results of splenectomy in these cases are most gratifying.

Banti's disease is characterized by a clinical course in which there is a progressive increase in the severity of the symptoms. One of the first signs is enlargement of the spleen. The anaemia is of the secondary type. It is very important to operate in the early stages of the disease, before dense adhesions are formed between the spleen and the surrounding parts particularly the diaphragm, and before the development of anaemia, liver fibrosis, and ascites.

In Gaucher's disease, splenectomy is the only method that has met with success, but it cannot be stated positively to produce a cure.

Purpura hæmorrhagica is most commonly attributed to infection. A careful blood examination is of the utmost importance. In the diagnosis the bleeding time, coagulation time, and capillary re-

sistance are of importance. A blood phenomenon in this condition is failure of the clots to retract. Mention is made of the acute fulminating type and the type becoming chronic which is seen most frequently in early life, particularly in girls. Little can be expected from non operative treatment. The best chance of cure is offered by splenectomy.

In the light of our present knowledge, splenectomy is contra indicated in lymphoid leukaemia, polycythæmia, and the rapidly progressing fulminating forms of hæmolytic jaundice, splenic anaemia, and pernicious anaemia. In myelogenous leukaemia, splenectomy offers the best chance of cure if the spleen is previously treated with radium.

EMIL C ROBITSHEK, M.D.

**Rolleston, Sir H. Indications for Blood Transfusion**  
*Brit M J* 1926, ii 969

**Cruchet R. Transfusion of Blood from Animal to Man**  
*Brit M J* 1926 ii 975

**Keynes G. Blood Transfusion in Surgery**  
*Brit M J* 1926 ii 980

ROLLESTON states that the survival of transfused red blood cells in the circulation varies with the morbid condition. Reactions are often dependent upon factors other than the blood grouping. There are three forms of reactions: (1) the acute, due to agglutination and hæmolysis, which occurs immediately; (2) the delayed or proteolytic response coming on after from one to twelve hours; and (3) the systemic or constitutional reaction.

Blood transfusions are of value to make good the deficiency of blood after acute hæmorrhage, to increase the coagulability of the blood by supplying fibrinogen, to make good a deficiency of red blood cells, to furnish substances in which the blood is deficient such as antibodies in acute infections and functionally active hæmoglobin in carbon monoxide poisoning, to act on the bone marrow which is disordered as in leukaemia, to dilute toxins in toxæmia, and to increase the bactericidal power of the blood through the action of leucocytes and the opsonic power of the serum.

In reviewing the indications for blood transfusion, Rolleston discusses acute anaemia due to hæmorrhage, chronic anaemia due to repeated hæmorrhages, hæmorrhagic diseases and conditions, purpura hæmorrhagica, postoperative shock, hæmorrhagic diseases of the newborn, hæmophilia, jaundice, pernicious anaemia, anæmias other than Addison's anaemia, leukaemia, acute septicæmia, intoxications such as carbon monoxide poisoning, and debility.

CRUCHET presents a review of experiments in the transfusion of blood from animals to man. He draws the following conclusions:

1. It is necessary to transfuse the blood very slowly.

2. The donor animal must be absolutely healthy and must not have performed any muscular work for one or two hours previously.

3. The blood must be used immediately after it has passed from the vein of the yielding animal.

4 In the transfusion of blood from animal to man the blood of the horse seems to be better tolerated than that of the sheep or the ox

5 The blood of the horse should be diluted one half to one third with physiological serum

6 It is well to add adrenalin to the mixture to be transfused up to a strength of 1:1000

7 The transfusion of the blood of the horse to man might be done in the same way as the intravenous injection of physiological serum

KEYNES summarizes the reports received by the London Blood Transfusion Service. Two hundred and six of the cases in which transfusion was done were medical and 411 were surgical.

Gastric and duodenal conditions: 121 cases no benefit in eighteen; temporary benefit but subsequent death in thirteen; a good or very good result in ninety.

General surgical cases including amputations, splenectomy, etc.: 100 cases no benefit in four; temporary improvement in six; a good or very good result in ninety.

Hæmophilia: four cases no benefit in one; a good result in three.

Septicæmia and pyæmia: twenty-five cases no benefit in twenty-two; a good result in three.

Gynecological conditions: sixty-nine cases no benefit in seven; temporary improvement in four; a good or very good result in fifty-eight.

J. FRANK DOUGHTY, M.D.

Grulee C. G. Intra-peritoneal Transfusion in von Jaksch's Anæmia. *N. York State J. M.* 1926, xxvi, 921.

Von Jaksch's anæmia or anæmia pseudo leucæmia infantum is a severe anæmia accompanied by splenic enlargement, an increase in the white blood cells, chiefly the mononuclears, enlargement of the liver and nucleated red cells.

The author reports upon a series of twelve cases in infants from 9 months to 3 years of age which were treated by intra-peritoneal transfusion. Both the direct and the indirect method were used.

In the direct method the blood was drawn from the donor into a 100-c. cm. glass syringe and injected into the peritoneal cavity immediately. When more than 100 c. cm. was given, two syringes were employed.

In the indirect method the blood was drawn from the donor into a bleeding bottle and mixed with 10 c. cm. of a 2½ per cent solution of sodium citrate for each 100 c. cm. of blood.

The immediate results were good in almost all of the cases, improvement being noted in both the blood picture and the general condition. The ultimate results were not as definite. The younger the child the better the result.

Intra-peritoneal transfusion permits the introduction of large quantities of blood at short intervals without much difficulty.

RAYMOND CREEN, M.D.

# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE, POSTOPERATIVE TREATMENT

Rehn, E. *Surgery and Organ Function* (Chirurgie und Organfunktion) 50 Ta., d. deutsch. Ges. f. Chir. Berlin 1926

Organ function is life. Life depends not only on the function of the organs, but also on their harmonious function. Disease represents the sum of functional disturbances becoming progressively more extensive. The surgeon must attempt to give his treatment before the development of secondary organic disturbances. Therefore an early diagnosis is of great importance. In the majority of cases only an early operation will effect a cure.

The surgeon must bear in mind that an operation is of more importance to the patient than the results of the mechanical injury. The regeneration following an operation is not limited to the site of the operation but occurs in all of the organs. Every physical change is accompanied by a psychic change. The surgeon must not be a mere technician, he must always take into consideration the effect of the operation on the organism as a whole. Different persons react differently to operation. The surgeon must know the various types of reaction and attempt to prevent their harmful effects.

The importance of the constitution in the effect of an operation was especially emphasized by Pavr. In the cases of hypoplastic and lymphatic persons the reaction is such that every operation is dangerous. Asthenic and hyposthenic persons are less endangered. Another type endangered by operative interference is the embolic type. The embolic type of person has a pale skin and adiposity and is not well adapted to withstand mental and physical strain. By means of comparative graphs, Rehn demonstrates the increased coagulability of the blood of such persons. This type of patient should maintain physical activity as much as possible up to the time of operation.

Endocrine disturbances, constitutional anomalies of the sympathetic nervous system with their effect on the respiration, heart, blood pressure and metabolism are of influence on the operative course. The sympathetic as well as the parasympathetic nervous system exerts an influence. Weakening of one of these systems is associated with danger.

Complete confidence of the patient in the physician aids convalescence. The vagotonic person is a poor operative risk. Such a person has an increased susceptibility to shock due to lability of the vasomotor system. Under such circumstances a fall in the blood pressure occurs easily and even local anesthesia is to be avoided. The vagotonic type has slight resistance to the injurious effects of narcosis

there occurs a disturbance in the relations between the potassium and the calcium salts to the detriment of the latter. The unfavorable effects of this disturbance of balance may be kept within certain bounds by means of afeinil.

Susceptibility to shock is increased also in the young child. Shock may be caused by any disturbance of the mineral metabolism. Its occurrence is favored also by all substances of a toxic or infectious nature. The danger of narcosis is not to be underestimated. Narcosis may be the cause of a vaso motor collapse which has a very unfavorable effect on the heart and the circulation. It leads also to severe disturbances of metabolism which are manifested chiefly in the liver and biliary passages. Therefore chronic disease of the liver is especially aggravated by narcosis.

Investigations have shown that the danger of narcosis is caused chiefly by a disturbance of the alkali reserve. Experiments on animals show that in narcosis induced with chloroform or ether there is a decrease in the alkali reserve. Most favorable in this respect is narcofen. Attempts should be made to render this substance less explosive.

In the treatment of shock and the other complications of narcosis it is wrong to use saline or glucose infusions indiscriminately. In many cases a transfusion of blood is preferable.

Before every operation a functional test of the heart, lungs, kidneys and liver should be made when possible. The author has made graphic studies by means of the electrocardiogram before, during, and after operation. Disturbances of cardiac conduction, extrasystoles and auricular fibrillation may develop. The effect depends upon the condition of the heart, especially the functional capacity of the heart muscle. Therefore a functional study of the heart is of importance. A good test is that recommended by Kaufmann at the Surgical Congress in Germany last year combined with the blowing up of a tube with air ten times. To stimulate the function of the heart, digitalis is recommended but should not be given indiscriminately in every case.

The chief danger in the lungs is the development of capillary bronchitis in the origin of which the irritation of the sympathetic nervous system plays an important part. As prophylactic treatment the administration of afeinil is recommended. Although this does not always prevent pulmonary complications it renders them less severe.

The kidneys always show an acetoneuria and at times a transitory albuminuria after narcosis. For the testing of kidney function the author recommends his alkali acid test.

The results of the author's tests of liver function show how serious the disturbances following nar

cosis may be especially in cases of chronic liver disease. In the latter great care is necessary.

All of the facts cited demonstrate that the surgeon must have an accurate knowledge of physiology. Each organ is a part of the whole. In the development of the surgery of the individual organs the body as a whole must not be forgotten. The more important the diseased organ is to the body the more conservative must be the surgical treatment.

In the healing wounds the total metabolism and the distribution of electrolytes play an important rôle. *Cell life and cell function lead to healing but are themselves dependent upon higher factors.* In the treatment of wounds local applications are often of less importance than regulation of the general habits of life. The author cites the research of the

Munich school with regard to the effect of foods. In these investigations it was found that wounds heal better when acid foods are given than when alkaline foods are given. In cachexia the conditions are different the patient suffering from a depletion of the alkali reserve. In colon bacillus pyelitis and many conditions associated with the formation of urinary sand an intake of alkali must be provided. In the case of a poorly healing wound in a diabetic local treatment will not help if the sugar metabolism is not regulated by the administration of insulin. The newborn infant has a tendency toward acidosis. *This must be combated.*

In conclusion Rehn states that surgery will progress only on the basis of a physiological study of the interrelations of the parts of the body.

STEFFINER (Z.)

# PHYSICOCHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Putnam T J Some Brominized Oils for Radiographic Use Preliminary Report *J Am M Ass*, 19 6 lxxxvii 1102

The various radio opaque oils (lipiodol, iodipin etc) which have recently been introduced find a growing use in the roentgenography of the spinal canal the ventricles, the lungs the paranasal sinuses the joints, the uterus and the tubes But though various accidents have been reported from their use no detailed study of their composition and action has been made Both of the original oils are iodized salad (vegetable) oils introduced as palatable iodides many years ago and their introduction into roentgenography has been largely empirical

Several different types of bromine and iodine compounds were made from eleven kinds of oil selected for their variety of physical and chemical properties

The irritating qualities of the more promising compounds were tested by injecting 0.05 c cm of each into the anterior chamber of a cat's eye After twenty four hours the aqueous humor was with drawn under standard conditions and the cells in it were counted It was found that the commercial iodized vegetable oils gave counts of 2,000 to 5,000 The opaque oil which appeared the least irritating was brominized lard oil which produced counts of 150 to 500 cells under similar circumstances Small bubbles of air under the same condition gave counts of 2,000 to 8,000

In regard to absorbability, the brominized lard oil also appeared preferable to the vegetable oils When injected into the eye of a rat, a drop of brominized lard oil was absorbed in about four weeks while similar drops of the vegetable oils appeared intact three months later Gases have the advantage of being more rapidly absorbed than oil

The brominized lard oil is therefore being subjected to clinical tests It is slightly less opaque than the oils now on the market, but is more fluid and more easily emulsified Brominized sperm oil is very opaque and has a low viscosity, but is more irritating than lard oil

Desjardins A U Stimulation and Immunity in Radiotherapy *J Am M Ass* 1926 lxxxvii 1537

The idea has become widespread among physicians that radium and roentgen rays possess the power of stimulating living cells, meaning thereby the growth of cells or collections of cells such as tumors From a survey of the literature and the amount of evidence indicating that continued acceleration of cellular metabolism does not follow irradiation, the author draws these conclusions

1 Cells and collections of cells, such as organs or tumors, in plants and animals, cannot be stimulated in the sense that they acquire greater ability to function in a normal manner

2 Any such apparent stimulation is only a transient phase which is invariably followed by more or less pronounced functional or organic deterioration

3 The assertions of a few authors that such stimulation takes place must be based on the insufficient duration of their experiments, the misinterpretation of the results of their studies, complicating circumstances the nature of which is not clear, or misuse of the word 'stimulation'

Another misconception which has gained wide acceptance by members of the medical profession concerns the biological effects produced by irradiation or, more specifically the mechanism by which radium and roentgen rays bring about the partial regression or the complete disappearance of tumors The mass of evidence shows that the major factor in the effect of radium and roentgen rays on cancer cells is a direct one It consists of at least two overlapping and interrelated factors (1) a direct action on the cells of the tumor and (2) a direct action on the endothelial cells in the blood vessels supplying the tumor Such of these cells as are irreparably injured by the irradiation are replaced by connective tissue In some tumors the action of the rays is greatest on the tumor cells themselves, whereas in others the influence on the vascular endothelium predominates To these major factors there may be added still others, though less important, but in the present state of our knowledge it is impossible to specify what these may be and what limited influence they may have in the action of irradiation on living tissues

## MISCELLANEOUS

Mertz A An Increase of Ferment in the Serum Following Light and Roentgen Ray Irradiation, an Index of the Processes of Cell Destruction (Fermentvermehrung im Serum nach Licht und Roentgenbestrahlungen ein Index fuer Zellzerfallsorgaenge) *Strahlentherapie* 1926 xvii 301

Peptidase, a ferment liberated by the breaking down of the dipeptid glycytryptophan, occurs in the living body cells and after the physiological breaking down of the cells goes over into the blood serum It can be easily demonstrated in the serum by incubating the reagent in the incubator at 56 degrees for two and a half hours The tryptophan thus freed can be distinguished by means of the red color which appears when it is treated with chlorine or bromine Graded dilutions of the serum are made and the solution of the greatest dilution which still shows a

breaking down is recorded. In this way a peptolytic index is obtained which in each individual is strikingly constant.

In the cases of children in which this index was determined before and after irradiation with the Alpine sun rays, natural sunlight and roentgen rays, a distinct increase in the index was noted after the irradiation. The author believes that illness following roentgen ray irradiation may be regarded as a poisoning by protein end products.

VON SCHUBERT (C)

Hess A F. The Use and Misuse of Ultraviolet Therapy. *New York State J Med* 1926 xxxi 516.

Ultraviolet irradiation is a specific for the prevention and cure of rickets and tetany. By exposure to ultraviolet irradiation it is possible to convert foods such as vegetable oils, carrots, spinach and dried milk into active anti-rachitic substances. Ultraviolet irradiation is of great value also in the treatment of multiple furunculosis and tuberculosis, especially tuberculosis of the peritoneum, bones, joints and glands. Brunettes seem to be more benefited by it than blonds. In eczema the results of this treatment have been unsatisfactory.

LLEWELLYN R I FWIS M D

Paizis D. The Treatment of Moist Gangrene in Diabetics by Diathermy (Traitement des gangrènes humides des diabétiques par la diathermie). *Presse méd. Par* 1926 xxxiv 1242.

Diathermy is effective in moist gangrene in diabetics because it produces heat in the tissues, improves the circulation, increases the defensive

power of the body against pathogenic agents either by improving the local circulation or acting directly on the cells and may act also directly on the bacteria. Of nine cases treated by the author with this method, a completely successful result was obtained in eight. From the very beginning of the treatment, Paizis noted a decrease in the pain and edema, the elimination of sloughs, intense granulation of the wounds, a decrease in the general signs of toxic infection and a fall in the temperature. This improvement did not seem to depend on the insulin which some of the patients had been given.

When the gangrene is situated on the foot, an electrode of very thin paper such as that used to wrap chocolates is wrapped around the upper part of the leg and the front part of the foot is sheathed to form another electrode. Care is taken to apply the paper tightly to the skin for if it is separated at any point a spark will be produced which will cause a troublesome burn. As it is sometimes difficult to apply the electrodes closely, Chevalier tried to overcome this difficulty by using as an electrode a saturated solution of sodium chloride into which he plunged the patient's foot. The current varies 500 to 1,200 ma, depending on the patient's tolerance and is applied at first for twenty minutes twice a day. The intervals are then increased gradually to possibly two or three days.

The strictest asepsis is observed in the dressings. Wet dressings are used in the beginning and dry dressings are applied when the inflammation has subsided. Insulin and a diabetic diet should be given according to the usual rules.

AUDREY G MORGAN M D

## MISCELLANEOUS

### GENERAL BACTERIAL, PROTOZOAN, AND PARASITIC INFECTIONS

**Kaiserling** Sepsis from the Pathologico Anatomical Standpoint (Sepsis vom pathologisch anatomischen Standpunkt) *Deutsche med Wchschr* 1926 In 1199

By 'sepsis' the author understands the reaction of the body to the continued or repeated introduction into the blood stream of preponderantly pus forming micro organisms. The reaction is dependent upon the virulence and the number of the organisms and the ability of the body to react.

Sepsis maligna occurs when virulent organisms enter a body incapable of resistance. As death results after one or two days the changes in the internal organs are of no significance.

Gas forming micro organisms on the other hand, cause very marked changes. Worthy of note in such cases is a peculiar warmth of the corpse. The growth of the organisms progresses rapidly in the corpse therefore sections yield little worthwhile information when they are made later than one hour after death. The spleen is septic. The liver shows the picture of cloudy swelling, and occasionally there is a light icterus. The icterus is not always due to changes in the liver, on the contrary it is often the result of increased hæmolytic in the blood spleen and liver. The kidneys and heart muscle show cloudy swelling. On microscopic examination an increase in the leucocytes in the blood is found. A cure occurs if the body is able to wall off the portal of entry by new connective tissue and to kill the bacteria that have already entered it.

Streptococci often cause less cell and tissue damage than staphylococci and produce a diffuse phlegmon instead of numerous abscesses. Endocarditis and thrombophlebitis are more common in staphylococcal infections and are dangerous especially because of the necrosis and extensive breaking down of the tissues they often lead to embolism.

It appears that the chief role in the defense against the micro organisms is taken by the vascular endothelium in the liver, spleen and bone marrow and the reticulo endothelium and the endothelium of the vessel walls which are morphologically and functionally related to it.

Of the septic types of endocarditis verrucous endocarditis is the least dangerous. To this belongs the disease of the valves developing especially in the course of rheumatic arthritis. In such cases of chronic sepsis we are dealing with a smaller number of bacteria which because of the good resistance offered by the endothelium and the connective tissue, produce only limited necrosis and small blood platelet thromboses and by irritation stimulate the

growth of connective tissue. Related to endocarditis are the rare cases of endarteritis ulcerosa.

IRFY (Z)

**Nickel A C** The Localization in Animals of Bacteria Isolated from Foci of Infection *J Am M Ass* 1926 LXXXVII 1117

The foci of infection studied by the author were the tonsils, teeth, prostate, and cervix. All culture material obtained from these foci was plated aerobically on blood agar plates and inoculated into glucose brain agar and glucose brain broth made according to Rosenow's method. The great majority of the strains isolated consisted of a partial tension, green producing streptococcus which in primary culture grew poorly or not at all under aerobic conditions. These partial tension cultures, when freshly isolated and injected intravenously into rabbits tended to produce lesions similar to the lesions of the patient from whom the culture was obtained.

The highest incidence of specific localization was shown by cultures from infected teeth. In every instance the percentage of localization in the control animals was only a small fraction of the large percentage of specific localization in the animals with the specific strains. The causal relationship between the organisms and the lesions produced was established by isolation of the former from the lesions when the blood and other tissues proved sterile and by their demonstration in the sections. The diseases thus studied included arthritis, myocarditis and endocarditis, myositis, lesions of the eye, lesions of the skin, and ulcer of the stomach and duodenum.

This method of estimating the localizing power in animals of organisms isolated from foci of infection is of diagnostic as well as therapeutic value. It often serves to demonstrate which of a series of organisms commonly found in foci bears a causal relationship to the systemic disease and what particular focus harbors such organisms, and it provides the means for active immunization with specific autogenous vaccines.

**Jackson R H** Surgical Treatment of Certain Massive Blastomycotic Skin Lesions *Am J Surg* 1926 NS 1 185

Jackson reports two cases of extensive blastomycotic skin lesions in which surgical intervention was undertaken after the patients had been under the care of competent dermatologists for eleven and two years respectively and the lesions had become more extensive under non surgical treatment.

Under nitrous oxide and ether anaesthesia large soldering irons heated to a dull red were applied



and re applied to the entire area of the lesion until a thorough cooking of the tissues to a depth of about 3 or 4 cm was assured. The cooked surface was then removed with sharp spoon curettes. The curetting continued until blood appeared when the irons were again applied. This procedure was repeated until all evidence of the disease had been removed. The final application of the cautery left a light charred seared area.

At the conclusion of the operation a hot wet dressing of 1 per cent copper sulphate solution was applied to the whole area. This dressing was renewed each day until healthy granulations and epithelization appeared. Potassium iodide 1 dr and 1/4 gr capsules of copper sulphate (precipitated) were administered internally.

Epithelization was aided by the application of adhesive zinc oxide plaster strips. Skin grafting was not necessary. In one case epithelization was nearly complete at the end of seven weeks. In the other convalescence was shortened by the use of 'cootie skin grafts'.

With regard to the diagnosis of blastomycosis Jackson mentions the peculiar foul odor occurring in advanced cases. JACOB M. MORRIS, M.D.

### DUCTLESS GLANDS

Rowntree L. G. and Snell A. M. The Diagnosis and Treatment of Certain Glandular Deficiencies. *Med Clin N Am* 1926 1 513

The treatment of endocrine diseases at the present time resolves itself into (1) substitution therapy that is the replacement of a partially or completely missing hormone by one of the same nature or (2) the surgical removal of gland tissue which is excreting an excess of hormone. A perfect example of substitution therapy is the management of a case of myxedema. In this condition sufficient thyroid extract is given to bring the depressed metabolic rate to normal and a suitable maintenance dose of thyroid extract is given daily in order to keep it at a normal level.

Parathyroid deficiencies either acute or chronic are frequently due to the accidental surgical removal or injury of the parathyroid bodies. The patient responds favorably to substitution therapy in which

the parathyroid extract of Collip is used. Two cases are presented one of acute tetania parathyreopriva and the other of chronic tetany. In both the symptoms were relieved by the use of parathormone together with large doses of calcium lactate a normal calcium equilibrium was established after a considerable period and it was possible to discontinue the treatment. In experimental animals a similar phenomenon is observed.

Diabetes insipidus may be either idiopathic or secondary to cerebral lesions of various sorts. In the latter group metabolic rates are as a rule lowered while in idiopathic cases the rates are usually within normal limits. This point is frequently of diagnostic value. Secondary diabetes insipidus due to syphilis of the central nervous system is rarely relieved by vigorous antisyphilis treatment. The use of pituitary extract is effective in both types of the disease and controls the thirst and polyuria although it accomplishes nothing in a curative way. It is important to try various commercial preparations of pituitrin both hypodermically and intranasally since there is a marked individual variation in the response to various extracts.

Addison's disease is probably due to a deficiency of the cortical portion of the suprarenal rather than to a medullary lesion. Preparations of the cortex in use at the present time do not seem to be active or at least do not appreciably prolong the life of animals from which the suprarenals have been removed. Substitution therapy in Addison's disease is therefore confined to the administration of epinephrin by hypodermic injection and by rectum to the point of tolerance. The administration of suprarenal cortex by mouth should be tried even though there is some uncertainty as to its effect. The treatment of collapse so frequently a terminal event in this disease is rarely successful. Protection of the patient against exposure infection and emotional disturbances which may precipitate such incidents is of great importance. It is difficult to evaluate the effect of organotherapy in Addison's disease. Such treatment appears to do much good in certain cases but in others has little effect. Of a group of sixty-eight patients three lived nearly four years and in a number of those more recently treated the results of such treatment are apparently stationary.

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NOTE—THE BOLD FACE FIGURES IN BRACKETS AT THE RIGHT OF A REFERENCE INDICATE THE PAGE OF THIS ISSUE ON WHICH AN ABSTRACT OF THE ARTICLE REFERRED TO MAY BE FOUND

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### Head

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# International Abstract of Surgery

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## EDITOR'S COMMENT

THE clinical and experimental studies of Blair Bell and his associates at the University of Liverpool of the effect of various lead compounds upon malignant growths have been followed with widespread interest by surgeons in every part of the world. The comprehensive report of this group of workers presented at the meeting of the British Medical Association in Bath is abstracted on page 433. The reader cannot help but be impressed by the carefully planned organization of this group of workers facing so important a task by their obvious determination to attack the problem from every possible angle and by their judicial attitude toward the results so far attained.

With reference to the action of lead upon malignant tissue Wood states that sublethal injections of lead into white rats with carcinoma cause congestion, edema and necrosis of the tumor chiefly because of thrombosis of the blood vessels and only secondarily because of the toxic action of lead on tumor cells. He believes that thrombosis takes place only in the tumor.

In discussing the clinical application of the lead treatment Cunningham points out the contra-indications to its use and the methods that have been found of value in preventing the toxic effects of lead. He emphasizes the need for a less toxic and more therapeutically active preparation than those now available.

Lockhart Mummery's discussion of the prognosis in rectal cancer (p. 385) and the report of Judd and Parker on the mortality following 1324 operations on the biliary system and pancreas at the Mayo Clinic in 1925 (p. 388) help to indicate not only the prognosis in two important groups of surgical disease but also the high standards that are being set up for every surgeon against which to measure the results of surgical treatment. Patients suffering from carcinoma of the

rectum and patients with jaundice admittedly offer a trying test of surgical skill and judgment. That Lockhart Mummery was able to obtain a five year cure in forty five of ninety five cases of rectal cancer and that Judd and Parker and their associates were able to operate upon 179 patients with stones or other pathological conditions affecting the bile ducts of whom sixty-eight were jaundiced at the time of operation with a mortality of approximately 6 per cent should serve as a stimulus to more careful study and more exacting attention to methods that make such results possible.

The experimental and clinical studies of Williams upon the part played in intestinal obstruction and peritonitis by the toxins of anaerobic organisms (p. 379) seem to us of great significance to the general surgeon and particularly to the surgeons confronted with the emergency work of a large general hospital. That Williams and his associates at St. Thomas Hospital, London were able to reduce the mortality in cases of acute appendicitis from 6 to 17 per cent and in cases of acute obstruction from 24.8 to 9.3 per cent by the administration of bacillus welchii antitoxin to the patients of each group most severely ill (eighteen in the first group and nineteen in the second) is a strong argument in support of their theory that an important factor in the morbidity and mortality in these conditions is the specific toxin liberated by the rapidly multiplying anaerobes.

The discussion of Judd, Parker and Morse upon the variation of symptoms in a group of cases of tumor of the kidney and ureter and tuberculosis of the kidney (p. 402), and the description by Smith and Christensen of a method of preventing skin excoriation in patients with intestinal fistula (p. 380) are only a few of many other interesting and important abstracts in this month's issue of the INTERNATIONAL ABSTRACT OF SURGERY.

# INTERNATIONAL ABSTRACT OF SURGERY

MAY, 1927

## ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

### HEAD

McFarland J. Ninety Tumors of the Parotid Region in All of Which the Postoperative History Was Traced. *Am J M Sc* 1926 CIV, 804

The theory of accidental sequestration of embryonal cells during the early and complicated development of the face and neck affords the most satisfactory explanation of the origin of mixed tumors in these parts of the body. By this theory, it is easy to account for the number and variety of tissues found in the tumors and for their varying proportions and conditions.

Mixed tumors are individual entities having no relation to the normal structures in which they occur but from which they do not arise. They have nothing to do with other tumors and should be called "mixed tumors," regardless of their histology.

These tumors are inherently benign, but commonly recur after excision and if frequently disturbed become locally destructive and invasive without forming metastases.

The histology of mixed tumors is extremely complex but on that account the microscopic diagnosis is usually very easy. The immaturity, atypical arrangement and confused intermingling of the various tissue components easily lead to misinterpretations as to their nature.

Histological variations among mixed tumors have no bearing upon the prognosis. The rapid enlargement of a mixed tumor of long duration and slow growth is not the result of malignant change. Malignant change in mixed tumors must be rare.

The ninety tumors reviewed may be grouped as follows: Group 1, primary mixed tumors forty-four; Group 2, recurrent mixed tumors nineteen; Group 3, mixed tumors, microscopic not verified three; Group 4, probably mixed tumors with a histological appearance suggesting sarcoma five; Group 5, probably mixed tumors with a histological appearance suggesting carcinoma four; Group 6, recur-

rent carcinomatous tumors fourteen; Group 7, adenomata one.

Of the patients with primary mixed tumors thirty-six were alive and well after from four months to sixteen years following the operation. Six died from other causes from three to seven years after the operation, one died without treatment, and one died immediately after the operation.

Of the patients with tumors belonging to Group 2, nine were living and well from two to fifteen years after the last removal of recurrences, one died shortly after the operation, and two died one year and twelve years respectively after operation, but not from recurrence.

The three patients with tumors belonging to Group 3 are living, and well from three to sixteen years after the operation.

Of the five patients with tumors belonging to Group 4, four were living and well from four to nine years after the operation and one died two years after the operation but not from recurrence.

Of the four patients with tumors belonging to Group 5, two are living and well from two years and eight months to fifteen years after operation and two died from other causes sixteen and nine years respectively after operation.

Of the fourteen patients with tumors belonging to Group 6, nine died from the tumor, three developed recurrences but are free from them after from one to two years and two months after the secondary operation and two now have recurrences.

The one patient with an adenoma is living and well three years after operation. SAMUEL KAHN, M.D.

### EYE

Derby G S, Waite J H and Kirk E B. Further Studies on the Light Sense in Early Glaucoma. *Arch Oph th* 19 6 1v 575

The authors here record further observations on the light sense in glaucoma. The charts show the results of two tests made a year apart in thirty-nine



cases and of one test in thirty two other cases. Cases of established glaucoma showed retardation of dark adaptation and marked changes in the light minimum.

A series of normal eyes in cases in which there was definite primary glaucoma of the other eye showed delay in dark adaptation or a higher threshold than normal or both. In the cases in which retesting was done after a year the light minimum was found higher and in a few glaucoma had developed.

Light tests have been made in a large number of diseases but the amount of material collected is not yet sufficient to warrant a report. The authors express the hope that some simple means of determining the light minimum will be developed which can be used in the office and that the light difference may be investigated at a higher level of illumination than is now possible. VIRGIL WESCOTT MD

Bagley C H. Enucleation of the Eyeball with the Implantation of Endogenous Cartilage. *Am J Ophth* 1920 35 15 53

Since sympathetic ophthalmia has occurred after failure to remove all of the sclera in an enucleation all methods of evisceration are condemned. A good cosmetic result may be obtained by the implantation of autogenous cartilage in Tenon's capsule.

After ordinary surgical preparation a vertical incision is made over the sixth rib 5 cm. to the right of the midline. The insertion of the rectus muscle is split exposing the fused cartilage of the fifth sixth and seventh ribs. The sixth and the anterior perichondrium are removed the posterior layer being left to allow future regeneration. The usual enucleation is done sutures being attached to the recti muscles during the operation.

After all bleeding has been checked by hot solutions or adrenalin a graft composed of several layers of cartilage secured by fine catgut and about three times as large as the globe is placed in Tenon's capsule. Tenon's capsule is closed with a purse string catgut suture and three sutures of the same material are employed to close the subconjunctival tissues. The conjunctiva is carefully apposed to prevent infolding and is closed with a horizontal row of interrupted silk sutures.

No blood matching is necessary the cosmetic result is good and permanent sympathetic ophthalmia is eliminated and there is little postoperative reaction. SAMUEL A DUFF MD

Lent E J and Lyon M B. Hemangioma of the Choroid. *J Indiana Stat M* 155 1920 115 443

The authors report what they believe to be the twenty sixth case of hemangioma of the choroid on record. From this case and the twenty five previously reported in the literature they draw the following conclusions:

1. Hemangioma of the choroid is a rare condition. It occurs most frequently in the second decade of life.

3. It grows slowly and ultimately causes retinal detachment and glaucoma.

4. It is non-invasive and non-metastatic.

5. The diagnosis from other intra-ocular tumors is difficult but possible. ALFRED H. FENDER MD

King C. Tuberculous Iridocyclitis as Observed with the Slit Lamp with Remarks on Tuberculin Treatment. *Arch Ophth* 1926 14 563

King states that for some time there will probably be a discussion as to the use of tuberculin as a diagnostic and therapeutic agent. In his opinion however it is hardly possible that the slit lamp will be of much aid in the argument when in the present state of our knowledge the clinical appearance of tuberculosis as revealed by it is identical with that of lues and sympathetic inflammation. After all we are dependent in the differential diagnosis of chronic iridocyclitis upon the history the general and local clinical findings and the findings of well established laboratory tests.

In conclusion King says that to those who have seen the general physical and laboratory examination made by German ophthalmologists in cases of ocular inflammation it is not surprising that they discover tuberculosis in such a high percentage. German ophthalmologists have made good use of tuberculin but like some American ophthalmologists have not sufficiently realized the importance of focal infection or coincident infections. VIRGIL WESCOTT MD

Wright R E. Blocking of the Main Trunk of the Facial Nerve in Cataract Operations Based on Experience in Over 150 Cases. *Arch Ophth* 1916 14 555

The author suggests a method of blocking the facial nerve in cataract operations in the cases of unruly patients. It has been tried in 150 cases with good results. The side of the face becomes mask-like and the pressure on the globe is limited to that caused by the levator muscles of the globe or a bulging eye. The only disadvantage arises from the lagophthalmos. In four cases this persisted so long that a tarsorrhaphy was necessary. The lids must be carefully approximated while the dressings are applied.

The lobe of the ear is pulled forward and upward and the needle introduced at about the level of the mastoid process. Paralysis results after from five to fifteen minutes. VIRGIL WESCOTT MD

## EAR

Shambaugh G E. Fads and Fancies in the Practice of Otolaryngology. *J Am M* 155 1926 133 170

Shambaugh discusses theories relating to nasal neuroses the indiscriminate removal of the faucal tonsils the misinterpretation of the relation of nasal and nasopharyngeal conditions to certain forms of ear disease the treatment of the sphenoidal foramina for the relief of optic neuritis when there

are no definite indications for such treatment, and intranasal surgery for the relief of migrainous headache

W B STARK, M D

**Wilson J G The Maintenance of Attitude and Its Relation to the Vestibular Mechanism**  
*Laryngoscope* 1926 xxxvi 791

In stimulation of the semicircular canals by rotation which results in changes of attitude of the body the mechanical factor is angular acceleration but if we conclude our consideration of this change with the mechanical factor we have a restricted view of the process involved. Tait found that a frog rotated tangentially, with a constant acceleration, abruptly assumes certain postures 'in shifts' and concludes that the frog has a certain range of selection in the matter of posture. Contrast this with the following data.

Dodge found that if one is seated in a chair so that the back and body are fixed when the chair is slowly rotated with a constant, very slow acceleration starting at zero the following sensations result: (1) consciousness of motion with no knowledge of direction, alternating with periods when no motion is felt, (2) consciousness of correct rotation or a reversal effect (3) a fairly accurate knowledge of the direction of rotation which is gained as the speed of rotation increases.

In both experiments the mechanical factor is unaltered except in regard to increasing speed. It is difficult to believe that a constantly directed speed *per se* can give such varying impressions if we regard these impressions solely as the outcome of a mechanical factor. Something occurs when this physical energy is translated into nerve energy. The degrees of contraction of a muscle are not as numerous as the degrees of strength of the exciting stimulus but take place in a series of steps. There is needed an increment in the intensity of stimulation before the effective result comes. There is a definite increment of energy before the "abrupt shift" is made just as there is a definite increment of frequency before the difference between pitches or of amplitude between two sensation units. This places the emphasis where it belongs, on the nerve mechanism, and less on the mechanical action of acceleration.

There are two thoughts which should ever be present when one desires to apply experimental findings from lower mammals to man.

1 That the central nervous system is a unit into which fit several more or less independent units with special functions, of which one equilibrium, has an important part of its mechanism located in the labyrinth.

2 That when the labyrinth is considered at different stages of vertebrate development the position of the anatomical mechanism involved is not constant. There is a flexibility in the mechanism with fixation of function.

The central nervous system controls the movements and the attitudes of the body. To do so adequately, it must have information in regard to

the attitudes of the body or movements which are being carried out. To assist in supplying such information is the chief function of the labyrinth. Involved in the complete reactions necessary for equilibrium we have three factors: (1) the adequate afferent stimuli, from various sources, which set the mechanism going, (2) the co-ordination of these stimuli, the summing up and adjustment of the stimuli, the avoidance of conflicts, and (3) the efferent pathway through which the adequate muscular reactions are made effective.

When one analyzes the first of these one is impressed with the number of responses in which afferent impulses from more than one source can be shown to participate. Frequently it is the accessory afferent impulses arising from sensory fields other than the limited one to which a given stimulus is applied, which makes the reflex response adequate for the particular movement required by the animal. In the maintenance of equilibrium a number of afferent impulses are involved. The play and interplay of these afferent forces are bewildering in their complexity and will remain so unless we recognize the underlying essentials. One aid to our diagnosis as clinicians is the study of the modifications of typical motor responses which occur when any particular afferent channel is blocked, for instance the alteration of the normal reaction to caloric stimulation. There is the possibility that when one of these afferent channels is interfered with by accident or disease, certain other channels may, by the increase in the quantity of energy which passes over them, compensate, in part at least, for the loss of the impulse which formerly came in over the damaged pathway.

From the labyrinth, two muscular reflexes arise: (1) movements which are transitory, for instance, in the eyes, produced by angular acceleration or by the caloric reactions, and (2) unconscious compensatory positions persisting after movement and retained so long as the head remains in a particular position in space. These are distinguished also from one another as to the anatomical site of their origin. The site of the positional lies chiefly, it is believed in the otolith organs—that of the caloric, in the semicircular canals.

Positional reflexes arising from the labyrinth show a shift in the location of origin of the reflexes at different levels of the vertebrate phylum. Magnus has shown that, in rabbits and guinea pigs, they originate in the otolith organs but Maxwell clearly demonstrated that in fish the positional reflex could come from the ampulla. Here we note a first shift in anatomical location. The source of the reflex movements in the rabbit, Magnus locates in the saccule, but Parker and Maxwell have shown that in fish the loss of this saccular otolith "does not alter or weaken any of the compensatory movements, it does not disturb equilibrium or the righting reflex nor is the muscle tonus affected in any way." Here there is a second functional change in location.

Again tonic labyrinthine reflexes acting on the muscles are modified by the position of the eyes in

the head, lateral or frontal. In the rabbit with laterally placed eyes where the images do not fall on corresponding points of the retina these labyrinthine reactions are marked. In the monkey and man in which the images fall on corresponding points of the retina they are small and subsidiary to ocular positional reflexes. Here there is a third functional change during phylogenetic development. Related to this, we find in the guinea pig and rabbit the coordinating mechanism adjusting the tactile, the neck, and the labyrinthine reflexes for equilibrium located in the medulla pons and mesencephalon. But with the development of the cerebrum in the higher mammals the primitive coordinating mechanism has been modified by a shifting forward of coordinating areas. In the monkey and man the ocular component dependent on the activity of a high cerebral factor becomes a greater controlling factor in positional reflexes. In keeping with this change as a result of the experimental work on dogs and monkeys and from clinical observations with pathological findings in man it was found that the quick component involves a different pathway and higher cerebral association than the red nucleus or nuclei caudal to it as suggested by Magnus and his co-workers.

Labyrinthine righting reflexes by means of which the head always tends to remain in the normal position and does not conform to the different positions of the trunk can be studied in normal guinea pigs and rabbits. In all other animals the cerebral hemispheres must first be removed (decebration) but the mid brain especially the nucleus ruber must be left intact because the centers of these reflexes are situated there. Dogs and cats show the influence of the cerebral cortex in the activity of the visual righting reflex.

In decebration we cut off the so called inhibitory influence and then consider the effect of its absence on a center which very probably because of this cut off has augmentation of afferent force to it from other sources. But what was this inhibitory influence doing before it was cut off? Inhibition is a positive and not a negative quantity. Suppose an inhibitory center *A* located according to our hypothesis above the mesencephalon is controlling the red nucleus. To control it adequately Center *A* must get information from the periphery concerning equilibrium and such peripheral influences must pass up higher than the brain stem and the red nucleus. It may well be that the red nucleus and the cells which extend from it to the medulla act in part as Magnus has outlined but it is well to consider the possibility and likelihood that some part of the function of these areas has been transferred in man to other and higher areas or at any rate that profound influences above the mid brain have to be seriously considered. One should not forget the modifications in phylogeny which have already occurred, and we should not be too dogmatic in transferring experimental data from rabbits to man. Rather let us correlate the experimental facts so

clearly stated by Magnus with observed pathological results seen in our clinical cases for along this road lies progress.

## NOSE AND SINUSES

Cunningham O D. *Tutocaine A Local Anesthetic in Rhinology*. *Laryngoscope* 1926 xxvi 837

The author discusses the merits and defects of tutocaine as a local anesthetic from the laboratory and clinical standpoints.

In experiments on animals tutocaine was found to be 4.5 times less toxic than cocaine, 2.7 times more toxic than novocain, and approximately three fifths more powerful than cocaine for the induction of surface anesthesia. Its toxic symptoms are essentially those of cocaine and novocain.

In clinical use it was found that for the removal of tonsils a 5 per cent solution in 1 to 1000 adrenalin is a satisfactory substitute for 10 per cent cocaine for surface anesthesia and a 3½ per cent solution is a satisfactory substitute for 0.5 per cent novocain for infiltration. For most intranasal operations a 5 per cent solution in 1 to 1000 adrenalin is a satisfactory substitute for flake cocaine and adrenalin. For submucous resection tutocaine is less satisfactory than cocaine flakes and adrenalin.

It is somewhat slower than cocaine and novocain in producing equivalent anesthesia. It is superior to cocaine in its relative freedom from toxic by effects.

W B STARK MD

Hays II. *The Local Administration of Bacterial Vaccines in the Treatment of Subacute and Chronic Nasal Sinus Conditions*. *Laryngoscope* 1926 xxvi 812

In the treatment of subacute and chronic paranasal sinus infection the author applies an autogenous vaccine to the nasal mucous membrane and injects it into the antra.

The patient receives, in all, eight office treatments given at intervals of three or four days. In the interim he uses the vaccine at home twice daily in the form of a nasal spray.

Of sixty nine patients treated in this manner, twenty three were cured, thirty eight were benefited and eight were not benefited.

W B STARK MD

Turner A L and Reynolds F E. *Nasal Mucous Polyp. Intranasal Operation on the Ethmoidal Air Cells. Purulent Leptomenigitis. Death. Autopsy*. *J Laryngol & Otol* 1926 xli 717

In two previous communications published by the authors on their investigations regarding the pathways of infection from the nose and accessory sinuses to the intracranial structures it was proved that the infection may travel along the veins. In the two cases reported septic thrombosis of the cavernous blood sinuses developed as the primary complication in one from an initial focus in the ala nasi

in the other, from suppuration in the ethmoidal and sphenoidal air cavities

The case reported in this article was an example of acute purulent pneumococcal leptomenigitis consequent upon operation on the ethmoidal air cavities. Microscopic examination of the tissues demonstrated that the lymph sheaths of the olfactory nerves were the paths along which the infection had spread.

The article contains numerous photomicrographs and other illustrations to show this. The possible routes of intracranial infection from a primary focus outside the skull are enumerated.

The number of fatalities in relation to the total number of intranasal operations performed on the accessory sinuses in the numerous ear and throat clinics is not large even granting that more complications occur than are reported. From the microscopic investigation of the authors' case and of the two cases reported by von Eicken and Miodowski we must conclude that the olfactory perineural lymph sheaths provide one of the pathways along which infection may reach the meninges. The authors are at present engaged in investigating microscopically another case of postoperative fatality which may throw further light upon the path of infection in these cases. No postmortem examination should be regarded as complete unless this line of inquiry is undertaken.

In intranasal operations upon the ethmoidal air cells the olfactory area of the nasal cavity is a danger zone because of the perineural lymph sheaths in the mucous membrane and the close proximity of the thin cribriform plate. It is therefore advisable to avoid this area in order to eliminate so far as possible, the risk of infecting the meninges by way of the lymph sheaths of the olfactory nerves or more directly through a fracture of the cribriform plate.

ABRAHAM R. HOLLENDER M.D.

Sewall E. C. External Operation on the Ethmoid-Sphenoid Frontal Group of Sinuses under Local Anæsthesia. The Technique for the Removal of Part of the Optic Foramen Wall for the Relief of the Pressure on the Optic Nerve. *Arch Otolaryngol* 1926 iv 377.

After discussing the etiology, pathology, symptoms and diagnosis of sinus disease, the author describes the indications for operation and his operative technique in the treatment of disease of the ethmoid-sphenoid frontal group of sinuses. He advocates the use of the extranasal route and local anæsthesia. He describes also the technique of freeing the optic nerve by removal of the optic canal.

A series of thirty operations performed by Sewall are reviewed. There were no fatalities. In all of the cases the scars were almost negligible. Pain during the operation was slight. The time required for the operation was about one and a half hours. Practically no bleeding was caused by the work on the sinuses. The results were on the whole satisfactory. In all of the cases the symptoms com-

plained of before the operation were relieved, and in some of them the discharge had been entirely stopped at the time of this report.

W. B. STARK, M.D.

## PHARYNX

Crumrine C. A. An Anatomical Study of the Superficial and Deep Lymphoid Tissues of the Nose and Throat. *Atlantic M J* 1926 xxx 38.

The author describes the suboccipital, mastoid, parotid, submaxillary, submental, and retropharyngeal lymphatics which form the cervical glandular collar, the substernomastoid, internal jugular, and subclavicular lymphatics which constitute the vertical glandular chains, and the lymphatics of the gums, tongue, palate, pharynx and nasal fossæ.

W. B. STARK, M.D.

Steward F. J. Surgical Treatment of Malignant Disease of the Upper Air and Food Passages. *Brit M J* 1926 ii 819.

Knox, R. Treatment by X-Rays of Malignant Disease of the Upper Air and Food Passages. *Brit M J* 1926 ii 821.

Milligan Sir W. Treatment by Radium of Malignant Disease of the Upper Air and Food Passages. *Brit M J* 1926 ii 822.

Syme W. S. The Treatment by Diathermy of Malignant Disease of the Upper Air and Food Passages. *Brit M J* 1926 ii, 85.

STEWART. Early operable cases of malignancy of the upper air and food passages (perhaps 10 per cent of the total number) are those in which the primary growth involves a limited area, no enlarged lymphatic glands are palpable, and the general condition is good.

Doubtful cases constitute the majority—about 50 per cent of the total number. The site of the growth is largely immaterial, avenues of approach can always be planned. If the growth can be removed without too great interference with function there is a chance of cure or the probability of alleviation even if it is extensive and the glands on one side of the neck are involved.

In hopeless cases (40 per cent of the total number) a palliative operation such as the removal of a fetid bleeding ulcer of the tongue is often advisable.

The decision as to the procedure indicated is most difficult in the doubtful, borderline or hopeless cases. In these treatment may fail or there may be a chance for a brilliant success.

The chief dangers of operation are infection of the operative wound and sepsis of the lung. The mouth must be freed from infection. Septic teeth should be removed and the others carefully scaled and cleaned.

The anæsthetic of choice is ether given by intratracheal insufflation. A complete block dissection of the glands of the corresponding side of the neck is done through wide skin flaps.

If the growth is in the upper part of the pharynx, the mandible is sawed through and the growth excised with a sufficient margin of mucous membrane.

If the lower pharynx is involved, the excision is made lower, usually after the removal of the hyoid bone and part of the thyroid cartilage. Before the pharynx is opened it is isolated by gauze packs in order to lessen the risk of infection.

The growth may be removed by excision or diathermy. In the use of diathermy the peripheral coagulation seals off the surrounding tissues and prevents spreading wound infection. However on account of the prolonged local healing of the cicatrix pulmonary sepsis is liable to result. If the base of the wound is small and can be well closed Steward prefers excision whereas when it is large and irregular he prefers diathermy.

The result of the operation is dependent upon successful closure of the opening in the pharynx. Leakage infection is always serious. Numerous mattress sutures are used to unite first the submucosal surfaces and then the muscles. All sprays are excluded.

If the removal of the growth leaves a defect which cannot be completely closed the mucosa is sutured to the skin edges and subsequent plastic closure is done. Removal of a hypopharyngeal growth will leave a defect which must be filled by a skin flap (from the original incisions) or by the formation of a cicatricial stricture. A soft rubber catheter for feeding is fitted into the wound in the neck.

**X-RAY.** The treatment of malignant disease of upper air and food passages with the X rays has not been satisfactory chiefly because in such a limited depth of tissue it is not easy to administer a satisfactory dose without causing damage. However recent improvements in the technique have some what overcome this difficulty and better results are now being obtained with the use of medium wave lengths. An accurate diagnosis is essential.

Tuberculosis, syphilis and actinomycosis must be ruled out. Sometimes a few X ray treatments may reveal the nature of the disease. Inflammatory and lymphosarcoma masses disappear readily whereas tuberculosis disappears more slowly and in carcinoma the response is very slow.

Pre operative X ray treatment is recommended for early operable lesions. This should be applied chiefly to the glandular areas. Postoperative raying is also beneficial if it is not carried to the point of depressing the reparative powers. In inoperable cases alleviation is obtained by moderate doses as distinct from lethal doses of the X rays. Greater improvement in the results is to be expected from further refinements of the technique.

Five illustrative cases are reported. Some of them show the difficulties in the diagnosis. In others the X ray treatment causes improvement but in none did the improvement last longer than a year.

**MILLIGAN.** When the technique of radium application is further improved radium will supplant surgery in the treatment of inoperable malignancy of the upper air and food passages. With regard to the dosage there are two schools of opinion some advocating large doses and short exposures and

others advocating small doses and long exposures. Milligan favors small doses and long exposures. The best method consists in exposing the growth surgically and inserting the element under the guidance of the eye. Sarcomata disappear rapidly but frequently form metastases. Epitheliomata require only short exposures.

In the nasopharynx and oesophagus considerable technical difficulty is experienced in the introduction of radium. In the nasopharynx radium is of value because of its devascularizing effect. Its use is free from the risk attending operation in this region. The more fibrous the growth the larger the dose required. Sarcoma is readily dispersed.

In cases of sarcoma arising in the glands toxæmia may result from the absorption of tumor products. Therefore the attempt should be made to cause slow absorption of the growth. Edematized growths in the nasopharynx should be removed surgically. In cases of sessile and infiltrating growths surgery is useless but radium offers a possibility of cure.

The author does not remove the glands primarily preferring to wait until the radium reaction has subsided. Radium produces at first an œdema and increased vascularization with liability of some of the cancer cells to wander away. Milligan extirpates the glands surgically whenever possible. The burying of emanations in the glands is unwise as with this method several microscopic gland areas remain unaffected. Following surgical removal radium tubes may be buried in the field. The main artery should be tied to devascularize the area and the radium then applied externally.

Malignant nasal growths are not common. Sarcoma varies greatly in its virulence. The higher up its origin the more unfavorable the prognosis. As a rule the treatment of choice is lateral rhinotomy and removal of the growth.

In the maxillary and ethmoid sinuses exposure is effected by window resection through the canine fossa or lateral rhinotomy. Following ligation of the external carotid the external glands are removed and the growth is exposed and curetted. Radium is then applied and surface irradiation given.

Malignant disease of the palate is fairly frequent. It is generally inoperable but is easily treated by diathermy. Radium is rarely indicated.

Primary malignant disease of the tonsil is rare but squamous epithelioma extends back to the tonsil from the tongue fauces etc. In this region surgical intervention is seldom successful and the growth is radium resistant. In favorable cases (growth small and not fixed) radium tubes may be inserted *per os*. This requires great care. In the early stages the neoplasm is local and if treated at once is curable.

**SYME.** The aim of surgical diathermy is coagulation by heat not cauterization. Coagulation is obtained for a distance of  $\frac{1}{4}$  in from the acting terminal. A too strong voltage will result in cauterization, and a too weak voltage will consume considerable time in raising the tissues to a sufficient degree of heat.

To remove the growth, the diathermy knife is plunged into the tissues beyond it and the current turned on. The current is then turned off and the knife re introduced a little distance away. Cauterization of the surface is avoided. After coagulation has been produced all around the growth, the neoplasm is cut away with the diathermy knife used as a knife. If encounter with large vessels is anticipated the main artery, lingual or external carotid is tied. Anesthesia is induced with chloroform.

In the treatment of affected glands, small masses of glands are removed when the artery is ligated. When the masses are larger or operability is doubtful, the primary disease is attacked first. This generally leads to a reduction in the size of the glands (removal of sepsis) thereby facilitating their later removal. In the absence of obvious gland involvement, Syme does not open the neck except to ligate the carotid. Each case must be treated according to its particular requirements.

Malignant disease of the lower pharynx can be exposed surgically and then subjected to diathermy or treated with the suspension apparatus. The latter is preferable. Sometimes the two methods are combined. There is very little shock following diathermy, but the appearance of well being may be only simulated. Persons with sepsis from malignant disease of the mouth are not good subjects for prolonged ether anesthesia or operation. After three or four days they do not look so well, and in some cases sudden death occurs from heart failure.

The cases most suitable for diathermy are those of malignancy confined to the mouth. For operable cases of the lower pharynx and larynx, diathermy is not suitable.

In the discussion of this report, WOODMAN stated that by the use of diathermy in oesophageal carcinoma he has rendered patients able to swallow natural ly until death. HARRY C. SALTZSTEIN M.D.

## NECK

Tilley J. H. Exophthalmos. The Mechanism of Its Production in Exophthalmic Goiter. *Ann Surg* 1926 LXXXV 647

It is generally accepted at the present time that in exophthalmic goiter there is an actual anterior displacement of the eyeballs. The possibility that an increase in the width of the palpebral fissure might be a factor in the mechanism of the displacement has not been emphasized.

Tilley reports a case showing marked anteroposterior movement of the eyeballs on opening and closing of the lids. This was evident on simple observation and shown also by kinematographic films. It suggested that the position of the eyeball in exophthalmic goiter is dependent largely upon the restraining force of the lids.

The retrobulbar tissues must exist in a certain state of tension. Because of the rigidity of the walls of the orbit, this expansive force must be balanced by the eyeball which in turn must be partially restrained

from movement anteriorly by the eyelids. If the palpebral fissure is enlarged, the restraining power of the lids is of necessity reduced in geometrical ratio because of the spherical shape of the eyeball. The importance of these facts in relation to the enlarged palpebral fissure and the infrequent closure of the lids in exophthalmic goiter is obvious. This mechanism assumes an increase in the retrobulbar tissue to occupy the space and maintain the tissue tension resulting from anterior movement of the eyeball. If this explanation is correct, an increase of retrobulbar tissue is the result rather than the cause of anterior dislocation of the eyeballs.

It is possible that the unstriped muscle between the levator palpebrae superioris of the upper lid and the tarsal cartilage and in the lower lid between the conjunctival fornix and the tarsal cartilage which has been described by Mueller may produce a widening of the palpebral fissure by its contraction. Attempts to diminish the size of the palpebral fissure by a collodion dressing warrant further trial.

J. FRANK DOUGHERTY M.D.

Pemberton J. DeJ. Modern Management of Exophthalmic Goiter. *California & West Med* 1926 XXV 610

Pemberton reviews the progress of surgery of the thyroid and the difficulties encountered in the treatment of exophthalmic goiter. After the surgical management had been improved, patients were encouraged to undergo treatment at an early stage of the disease and eventually the operative mortality was reduced from a high level to between 2 and 4 per cent.

Plummer's theories of the nature of exophthalmic goiter and of the value of iodine in its treatment are summarized. Surprisingly soon after the administration of iodine there is a very definite change in the symptoms, especially in those of a nervous nature. Nausea, vomiting and diarrhea if present, often cease in a day. The more serious the case the more effective the administration of iodine. The histological changes induced render the technical procedures of the operation easier. The preoperative preparation must be adapted to the individual patient and include the administration of iodine, a high-calorie diet, and rest. In all instances however, the patient should be allowed to be up and about for several days before the operation. In the Mayo Clinic patients in a crisis are given a large amount of Lugol's solution sometimes from 60 to 100 minims daily. As the crisis subsides 10 minims are given three times daily until the operation is performed. Digitalis is no longer given routinely, and in any event its administration should be stopped at least three days before the operation.

When the risk of operation is great, preparatory measures should be continued as long as they are effective. The patient should be allowed time to regain his strength after a crisis before operation is undertaken. This may require a month or longer. Pemberton has found the operative risk to be

relatively greater in children with exophthalmic goiter than in adults. In the cases of children he therefore often prolongs the preparatory treatment to two or three months.

The success of the operation depends to a considerable extent on the patient's mental attitude. The operator should secure the patient's confidence. Local anesthesia is to be preferred if the cooperation of the patient can be obtained. If general anesthesia is necessary the type of anesthetic is of little consequence as compared with the experience of the anesthetist. Prolonged deep anesthesia should be avoided. The most frequent technical complications of the operation are injury to the recurrent laryngeal nerve and postoperative hemorrhage, either of which may cause death.

After operation Lugol's solution is given routinely but its postoperative administration cannot be substituted for its preoperative administration. Lugol's solution in doses of 10 minims daily is prescribed for 15 or three months after the operation.

In 1835 cases of exophthalmic goiter treated at the Mayo Clinic in the period from January, 1924 to January 1926 the mortality was just under 1 per cent.

**Brodersen N H and Harbitz H F.** Basedow's Disease and the Results of Its Operative Treatment in the Drammen Hospital (Norbus Basedow und Ergebnisse seiner operativen Behandlung im Krankenhaus in Drammen). *Acta chirurg Scand* 1926 131 107.

The authors have re-examined 132 patients who were operated upon for Basedow's disease by Lied in the Drammen Hospital in the period from 1911 to 1924. Most of them had been subjected to a radical operation performed in one stage under paravertebral and local anesthesia with removal of the entire right lobe, the isthmus and the left lobe except a small portion of the upper pole.

Of the eighty-seven cases in which the typical radical operation was done the condition was cured in 87.4 per cent, improved in 11.5 per cent and made worse in 1.1 per cent. A doubtful recurrence developed in three and a fairly obvious recurrence in two. In the cases of less radical operation the results were often transitory and the incidence of recurrence much greater. The patients were re-examined from one to four years after the operation. Of thirty-one patients who were operated upon for secondary Basedow's disease (adenomatous goiter with hyperthyroidism) twenty-nine recovered.

The authors discuss the effect of the operation on such symptoms as exophthalmos, tremor, nervousness, insomnia and psychoses, and upon the condition of the heart and pulse. They report three cases in which marked enlargement of the heart was greatly decreased. The pulse rate was decreased on the average by 31 beats. The average gain in weight was 7.9 kgm. Special mention is made of the effect of the operation on menstruation and pregnancy. Seven patients had a normal pregnancy and labor

from one to three years after the operation without recurrence of the goiter.

The postoperative reaction seems to have little relation to the severity of the disease. The authors doubt that the reaction depends to any great extent upon the absorption of gland secretion during and after the operation.

In three cases the operation was complicated by hemorrhage. The postoperative complications included bronchopneumonia (?) in one case, tetany in two cases, collapse with cyanosis and transitory icterus in one case, hoarseness for several weeks in one case and a transitory exacerbation of a psychosis in one case. Myxedema did not occur in any case. There were no deaths.

**Bartlett W.** Recognition of the Goiter Patient Unsuspected to Thyroidectomy. *J Am M Ass*

1926 127:1111-1119

**Lahey F H.** Substernal Goiter. *J Am M Ass*

1926 127:1111-1119

BARTLETT mentions the six characteristic features that are thought, in most instances at least, to characterize exophthalmic goiter. These are typical eye signs, thrills and bruits in the cardinal vessels which seem to be present in every case, vasomotor symptoms (vomiting, diarrhea and sweating), nervous irritability, mental aberrations of a primary nature, and crises and remissions which occur in most cases if the patient lives long enough. Patients who are not ready for operation are those with a high metabolic rate, increased non-protein nitrogen, hypersensitiveness to oxygen deficiency, lowered blood pressure, loss of weight, loss of self control and heart injury. Most important of all as a contra-indication to operation is definite heart injury. Patients with heart conditions may be divided into three classes: those who have a functional affection with temporary exhaustion of the heart; those with congestive heart failure and auricular fibrillation; and those in which the heart is completely burned out.

Five classes of patients appear particularly unsuited to thyroidectomy: those with the fulminating condition, adolescents, the insane, those with epilepsy, and pregnant women.

The preparation of the patient for operation requires measures to correct the thyroid secretion, decrease thyroid activity, restore the circulatory conditions and improve the neuropsychic condition. In addition the preparation may be divided into indirect general measures, direct local measures and indirect local measures. The indirect general measures include a sojourn in the hospital of such length that toward the end of it the patient may be subjected to a subtotal thyroidectomy as the one and only operative procedure. The direct local measures such as irradiation, injections and ligation are reserved for the obstinate type of case in which the condition cannot be improved sufficiently for operation under the plan just outlined. When neither the indirect general nor direct local measures

ures avail, something may sometimes be accomplished by indirect local measures which influence the thyroid by the obliteration or septic foci in the teeth, tonsils, sinuses, prostate or elsewhere although if possible this plan of action should be deferred until after thyroidectomy since it is generally admitted that the patient's resistance is lowered by such minor procedures.

There are certain persons who cannot be reduced to a condition in which thyroidectomy seems advisable—those who die of thyrotoxicosis, those whose condition is regarded as hopeless, those who are intolerant of restraint and those who die of intercurrent diseases.

A low operative mortality depends upon adequate preparation and the correct choice of patients.

LAHEY calls attention to the fact that substernal goiter is readily overlooked and often not recognized until serious conditions have developed. The progressive descent of a goiter or the location of adenomata or cysts of the thyroid where they may enter the mediastinum should be an outstanding indication for their surgical removal. Goiters that have entered the mediastinum and have deviated and flattened the trachea have usually done so only after their presence as goiters has been obvious for a good many years.

The types of goiter that most commonly become intrathoracic or substernal are the adenomatous goiters. Cysts and colloid goiters also become substernal, but much less frequently. Substernal goiter rarely exists without eventually producing a deformity of the trachea in either its course or its contour. Such deformities which result in respiratory difficulties often do not manifest themselves until the patient is well along in years and ill equipped to endure the serious ordeal of their removal.

The basic factor in the diagnosis of intrathoracic goiter is the palpation of the lower poles of the thyroid. If both lower poles of the thyroid can be felt to pass beneath the palpating finger as the gland ascends and descends on swallowing then except in cases of the rare substernal goiter due to aberrant thyroid tissue the goiter is not substernal or intrathoracic. However, if one or both lower poles cannot be demonstrated substernal goiter is to be seriously suspected and measures should be taken to demonstrate its presence or absence.

In deviation of the trachea secondary to substernal goiter with flattening and narrowing the effect of the decrease of the tracheal caliber is usually evidenced by an audible increased respiratory noise noted particularly after exertion. Dilatation of the superficial thoracic veins over the upper chest accompanies substernal goiter with fair constancy when the size of the mass projecting into the medi-

astinum is great enough to interfere with the venous drainage of the goiter.

Patients with substernal or intrathoracic goiter frequently complain of a feeling of substernal pressure and frequent choking attacks. A very striking and interesting point in the history is difficulty in breathing when the head is tilted to one side as when the patient sleeps on his side with a high pillow. Lahey believes that this is of great value in the diagnosis of substernal goiter particularly when such a goiter exists entirely within the chest.

The technical features of the removal of substernal goiters are the prevention of hemorrhage and protection of the pleura, thoracic duct and recurrent laryngeal nerve, three structures which form the walls from which the intrathoracic mass must be separated and the prevention of tracheal collapse during the removal of the mass.

JACOB S. GROTE, M.D.

Guthrie D. A Patient Who Underwent Total Laryngectomy Two Years Ago and Has Since Acquired a Useful Voice. *Proc Roy Soc Med., Lond., 1916*, III, Sect. Laryngol., 63.

The author reports an unusual case of total laryngectomy in a previously healthy man aged 35 years who was gassed during the war. For two years the patient had had an increasing hoarseness and for seven months an increasing dyspnea which became worse when he lay down. Laryngoscopic examination showed a swelling of the left ventricular band and in the left arytenoid region. Two weeks before the laryngectomy an emergency tracheotomy became necessary. A diagnosis of epithelioma having been made on the basis of a piece of tissue removed a total laryngectomy was done July 21, 1912. The patient made a prompt recovery and when seen again four months later was working daily and had a good pharyngeal voice.

In the discussion following this report it was brought out that the patient's voice is best during attacks of indigestion and depends upon contraction of the abdominal muscles. In the cases of patients who cannot swallow air it is sometimes necessary, for the production of a voice, to give an alkali followed by citric acid.

Two other cases were reported. In one, in which the laryngectomy was performed eight years ago, the voice which developed subsequently could be heard throughout a large hall.

The author believes that his patient does not swallow air consciously, but that the voice is produced by dilatation of the esophagus. The voice was recovered one month after the operation and since then has been gradually improving.

HAROLD M. CAMP, M.D.



# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Cheatle G L The Formation and Treatment of Fibro Adenomata of the Breast *Arch Surg* 1926 xiii 617

Cheatle describes the changes that occur in the terminal parts of the ducts and acini and the tissues of the breast that have been normal

Diffuse hyperplasia and the formation of intracanalicular fibro adenomata occur in the intra elastica tissue the tissue situated just internal to the elastic tissue of the duct

Diffuse adenomatosis and fibro adenomata arise from the pericanalicular and periacinous connective tissue the extra elastica tissue Fibro adenomata of this type may contain intracanalicular growth which may show diffuse hyperplasia of the intra elastica connective tissue

The formation of intra elastica and extra elastica fibro adenomata is a progressive process that affects consecutively fresh parts of a segment of breast that has been normal and accounts for the lobulation of the tumor

The correct treatment for fibro adenoma is excision of the segment of the breast that contains the tumor or tumor

The author emphasizes the fact that nodularity or lumpiness of a breast can be detected only in thin persons Nodularity of the breast in fat persons has been described but is due only to lobules of fat

RALPH B BETTMAN M D

Greenough R B Carcinoma of the Breast *Am J Roentgenol* 1926 xvi 439

This article is based upon the study of 175 cases of breast carcinoma collected and analyzed with a view toward helping to standardize the reporting of the end results of operations and other treatment and to obtain a uniform method for the recording and classification of cases Consideration is given mainly to the results of surgical treatment with and without prophylactic roentgen ray treatment

In about one half of the cases of radical operation in this series roentgen treatment was given either before or after or both before and after operation Brief mention is made of the technique used

To facilitate statistical deductions the cases are tabulated according to the treatment given and the results obtained

As regards the duration of the disease it was found that the percentage of cures in the cases of a duration greater than the average of the whole number (even and a half months) was greater than that of those of shorter duration This would indicate that a slowly growing tumor of long duration may have a better prognosis than a more rapidly

growing tumor which has been promptly recognized and treated

The degree of malignancy of the growth was found to have a marked influence on the course of the disease In cases of low malignancy the prospect of cure was better, even in the presence of axillary involvement, than in the less extensive cases in the group of medium malignancy No case of high malignancy even those without involvement of the axillary nodes resulted in a cure

Making due allowance for the fact that this is a small series of cases the author believes that the following conclusions are justified

1 Radical operation performed before the disease has extended widely offers the best expectation of cure in cancer of the breast

Pre operative and postoperative irradiation with roentgen rays, as given at the Massachusetts General Hospital in the period from 1918 to 1920 does not appear to have been of value as an adjunct to surgical operation

3 Nearly 30 per cent of cancers of the breast are so malignant that with our present resources we are unable to cure them

4 In the remaining 70 per cent of the cases there is a reasonable hope of effecting a cure by operation in the disease is not too far advanced

5 Education of the public and the medical profession to a better appreciation of the possible significance of breast tumors and to more prompt application of treatment may yet notably decrease the mortality of this disease

6 In the treatment of breast cancer which is beyond hope of cure by operation roentgen irradiation offers a better prospect of relief than any other procedure

ALGER HARTLEY M D

## TRACHEA LUNGS AND PLEURA

Patterson E J Beads as Foreign Bodies in the Bronchi Mechanical Problems Presented and Their Solution *Ann Otol Rhinol & Laryngol* 1926 xxxv 989

The author calls attention to the danger incurred in allowing children to play with beads which are not strung securely on wire She cites the mechanical difficulties presented by beads of different shapes and textures in the bronchi and states that in removal with forceps the bead must be grasped beyond its greatest diameter For this the ordinary alligator forceps are poorly adapted The forceps correctly constructed to grasp a bead must have the planes of the grasping forceps parallel instead of divergent and it is better if the distal ends bend slightly toward each other The Tucker bead forceps meets these requirements Removal by running a hook or wire

through the hole in the bead is possible only occasionally

JEROME R. HEAD M.D.

**Vinson, P. P. and Lemon, W. S. Limitations in the Use of Lipiodol in the Diagnosis of Diseases of the Lungs.** *Med. Clin. N. Am.* 1926 v 553

In discussing the limitations of lipiodol in the diagnosis of pulmonary disease the authors call attention to the necessity for preliminary bronchoscopic examination. Four cases are cited to illustrate the hazards of drawing conclusions from pneumonography alone. In the authors' opinion the type of method for the introduction of the lipiodol is immaterial if a direct inspection of the trachea and bronchi is made previously.

**Ochsner, A. Bronchography Following the "Passive Introduction of Contrast Media into the Tracheobronchial Tree."** *Wisconsin M. J.*, 1926 xvi, 544

Ochsner describes the technique of the "passive" introduction of iodized oil into the tracheobronchial tree which was first described by Nather in 1925. The palatine arch of the pharynx and the posterior pharyngeal wall are anesthetized with 10 per cent cocaine. This produces a sensory anesthesia so that the reflex act of swallowing is interrupted. The degree of anesthesia is determined by the mobility of the larynx. As soon as the patient is unable to move the larynx upward on attempts at deglutition, the anesthesia is complete.

The patient then stands behind the fluoroscopic screen and is given warmed iodized oil. The oil is allowed to roll back into the pharynx and the patient instructed to aspirate it by taking short, deep breaths. His body is tipped slightly to the right or the left, depending upon the side to be filled.

The "passive" introduction of the iodized oil into the tracheobronchial tree is superior to the other methods so far advocated because it is simple and easily applicable for fluoroscopic observation. Because of its simplicity, it may be used in a larger percentage of cases than more complicated procedures.

**Riviere, C. Bronchiectasis. The Medical Aspect.** *Lancet* 1926 ccvi 1102

**Roberts, J. E. H. Bronchiectasis. The Surgical Aspect.** *Lancet* 1926 ccvi 1102

RIVIERE points out that bronchiectasis, the essential characteristic of which is a bronchial dilatation may arise from a multitude of disease processes. The slighter cases seen especially in children, are not to be overlooked. The severe cases of the suppurative type originate in bronchial inflammation or obstruction or the aspiration of septic material. The symptoms vary with the amount and nature of bronchial dilatation, the adequacy of drainage and the severity of the infection. The diagnosis of bronchiectasis has been facilitated by two recent advances: (1) bronchoscopy, and (2) the injection into the bronchi of substances opaque to the roentgen

ray. The latter can be done directly through the bronchoscope or by needle through the cricothyroid membrane into the trachea.

In the treatment it is best to be satisfied with a moderate result that is the relief of dangerous symptoms such as can be accomplished by postural drainage and the use of the creosote chamber supplemented by drugs and, if necessary, by bronchoscopic treatment. This applies especially to bilateral cases.

If such measures fail, more radical methods may be tried. These have for their aim the three cardinal principles in the treatment of chronic pulmonary suppuration: drainage, compression and extirpation. The result will depend upon the suitability of the method for the type of case. Pneumotomy is suitable for single large suppurating cavities. Phrenic exeresis may eliminate and favor drainage in a strictly basal lesion. Pneumothorax and thoracoplasty should be reserved for unilateral cases in which the lung and cavities appear to be collapsible. Lobectomy and cautery lobectomy can be considered only for well localized areas of disease. The latter operation seems materially to enlarge the scope of the older pneumotomy and to establish external drainage in a larger number of cases. However the dangers of air embolism and hemorrhage are great. Under some conditions a combination of two or more methods may best meet the requirements.

In discussing anticipatory treatment RIVIERE points out the dangers of bronchial aspiration of septic material. To overcome this danger the head should be kept low after all operations until the cough reflex is fully established.

ROBERTS deplors the fact that the surgeon sees cases of bronchiectasis in the advanced stages, when the patient is enfeebled by long continued toxæmia, loss of sleep from constant cough, recurrent hemorrhage and possibly amyloid disease. He urges early diagnosis with the aid of the newer methods. Medical treatment, in his opinion, is palliative in most cases except those of children. A quick relapse usually follows its termination. Surgical procedures of some severity are justifiable because without them the expectation of life is not great and in cases with much infection life is not enjoyable. Before surgical measures are undertaken, a proper course of medical treatment should be instituted to get the patient in the best possible condition.

With regard to the different procedures, their indications, dangers and results, surgeons are nearly in accord. However, Roberts prefers thoracoplasty for permanent collapse of the lung when preliminary artificial pneumothorax has diminished the sputum considerably and when there has been marked chest contraction and mobilization of the chest wall will permit the lung to contract further. Prophylactic treatment by artificial pneumothorax may reduce the number of cases suitable for surgery, but when the condition is already established a collapsing operation should be done in the early stages when a limited rib resection is more likely to produce a cure. Roberts reports four illustrative cases.

Even when the operation is only palliative it will in the earlier cases enable the patient to earn his living without constant resort to a course of medical treatment which is apt to be followed by relapse. Surgery can do little in bilateral cases but as unilateral cases constitute over 50 per cent of the total number the close cooperation of the physician and surgeon is of great importance.

MARICE MEYERS M.D.

**Schlaepfer K.** The Effect of the Ligation of the Pulmonary Artery of One Lung without and with Resection of the Phrenic Nerve. *Arch Surg* 1916 62: 623.

The author reviews the late results following ligation of the left pulmonary artery in dogs without and with simultaneous section of the phrenic nerve. The main points made in the article may be summarized as follows:

1. Ligation of the pulmonary artery is associated with the fairly rapid development of a collateral circulation through the bronchial vessels but even after two years the extent of fibrosis in the lung with the ligated pulmonary artery is slight.

When ligation of the pulmonary artery is associated with simultaneous resection of the phrenic nerve fibrosis of the lung is much more extensive but there is a distinct retardation in the formation of a collateral circulation through the bronchial artery.

3. These two facts seem to be linked together as the most extensive fibrous reaction occurs about the radical of the bronchial artery.

4. It is obvious that simple ligation of the pulmonary artery is not an efficacious therapeutic procedure to stimulate fibrosis of the lung in tuberculosis and that more beneficial results might be expected if ligation of the pulmonary artery is associated with simultaneous resection of the phrenic nerve.

5. Also worthy of mention is the evidence of increased intrapulmonary pressure after ligation of the pulmonary artery as expressed by the findings both gross and microscopic of right sided cardiac hypertrophy.

RALPH B. BETTMAN M.D.

**Bettman R. B.** The Production of Artificial Pleural Adhesions: An Experimental Study. *Surg Gynec & Obst* 1926 41: 599.

The formation of pleural adhesions is of great importance in cases of lung abscesses which require drainage and those in which it is advisable to perform lobectomy by the Graham cautery method. No known method is entirely satisfactory in the production of adhesions. In experiments on dogs the author tried out every method he had heard of in order to ascertain which gave the best results. He found that tincture of iodine formalin alcohol and other chemicals could be injected into the pleural

space in quantities as large as 5 ccm without producing adhesions.

The method which gave the most satisfactory results consisted in burying a piece of ordinary braid in the pleural space in such a manner as to wall off the desired area. The braid was allowed to remain *in situ* for a week. When it was removed firm adhesions were invariably found.

The tape was buried by making an intercostal stab wound threading the tape through the wound into the pleural space and then allowing it to emerge through a second stab wound. The tape was anchored to the intercostal muscles and cut off short and the skin closed above it. At the end of a week it was removed by re-opening one of the stab wounds.

**Davis H. H.** Chronic Empyema. *Nebraska State M J* 1926 31: 436.

The author emphasizes that chronic empyema can be prevented by the proper treatment of empyema in its acute stage. Factors that favor chronicity are incorrect timing of the operation, inadequate drainage, the retention of foreign bodies used in establishing drainage, osteomyelitis of the ends of the resected ribs, bronchopleural fistulae and side pockets and lateral branch sinuses. Side pockets and lateral branch sinuses are to be suspected if after ten days of Carrel Dakin treatment the cavity is not free from pus.

Davis is greatly in favor of the Carrel Dakin treatment of acute empyema. He states that if it is begun before too much fibrous tissue is formed on the pleura the cavity will be sterilized and entirely obliterated by this treatment alone in most cases. When it is not entirely obliterated the solution cleans it and greatly reduces its size. Further operation should not be considered before the cavity remains stationary in size and its capacity is not decreased by forced expiration with the mouth and nose held closed.

ANTHONY F. SMITH M.D.

## ESOPHAGUS AND MEDIASTINUM

**Lundgren A.** Dilatation of the Esophagus Due to Tuberculous Retraction of the Cardia (Dilatation œsophagienne provenant d'un rétrécissement tuberculeux du cardia). *Acta chirurg Scand* 1926 131: 1, 2.

The author reports a case of exceedingly marked dilatation of the esophagus caused by a tuberculous process in the cardia.

Autopsy revealed, in the very tough and thickened connective tissue surrounding the cardia, two lump larger than Spanish nuts which had a typically tuberculous appearance both microscopically and macroscopically. During the early days of the patient's stay in the hospital the esophageal dilatation was attributed to cardiospasm.

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

McEachern J S The Prevention Diagnosis and Treatment of Postoperative Peritonitis *Canadian Medical Association Journal* 196 6 1421

McEachern deals chiefly with the spreading type of acute peritonitis. In this condition pathogenic bacteria are always present. The bacteria are introduced into the peritoneal cavity by the hands of the operator, the instruments, gauze, ligatures, etc. or from the skin of the patient's abdomen, an infective focus in the abdominal wall or an opening in the intestinal canal. They may enter it also by the hæmatogenous route, but this is rare. Rough handling of the intestine, forcible packing with gauze and the tearing apart of adhesions leave a devitalized field favoring infection and the growth of bacteria. These procedures must therefore be avoided. Preliminary cleansing of the intestinal tract is essential.

The diagnosis of postoperative peritonitis is based upon vomiting and pain persisting beyond the usual postoperative period, increasing rapidity of the pulse, and abdominal distention.

As treatment, some surgeons advocate early purgation to drive out intestinal toxæmia while others prescribe absolute rest with morphine, Fowler's position, nothing by mouth, gastric lavage, continued proctoclysis, and intravenous injections.

Occasionally drainage of the thoracic duct and intravenous injections of antiseptics are used.

CHESTER L CREAN M D

Adams J E Peritoneal Adhesions and Their Treatment *Practitioner* 1926 cxvii 273

The pathology of adhesions in the peritoneal cavity is that of inflammation. Two types of adhesions are recognized, viz. fibrinous and fibrous. These are called also 'temporary' and 'permanent' adhesions and may be aseptic, as in response to injury or infective. Temporary adhesions may become permanent if fibrous tissue is laid down on the fibrin already deposited on the irritated serous surface. For the formation of permanent fibrous adhesions two opposing serous surfaces must be damaged.

The fate of extravasated blood in the peritoneal cavity and its relationship to adhesive peritonitis is important, as such blood is thought by some to produce adhesions. Although blood in the peritoneal cavity is a foreign body, the peritoneum has powers of absorption and therefore blood is no more an irritant to it than is catgut. Of course if the blood harbors organisms, any type of adhesions may result, and since blood is an excellent culture medium it is important that no great quantity of it be left in the peritoneal cavity at the close of an operation.

The prevention of peritoneal adhesions is much easier than their destruction.

Irritation of the peritoneum by antiseptics is to be avoided. The danger from the use of iodine, picric acid, and similar substances on the abdominal wall is negligible if the skin so treated is dry before the abdomen is incised, but the intestine must not be allowed to come in contact with the iodized skin.

Drying is detrimental to endothelial surfaces, therefore any intestine withdrawn from the abdomen must be kept moist and warm.

It has been found difficult to produce adhesions between foreign bodies and the small intestine. As the latter is always moving it is thought that peristalsis is a factor preventing adhesive peritonitis. Accordingly the author gives 1 c cm of pituitary extract for three or four days after the operation of enterolysis and then every other day for a week. Eserine salicylate gr 1/40 may be used similarly.

Gibrolysin, which favors the vascularization of scar tissue, may be administered intramuscularly, or iodolysin or iodine by mouth to promote the absorption of inflammatory tissue.

RAYMOND GREEN, M D

## GASTRO INTESTINAL TRACT

Mayo C H A General Résumé of Peptic Ulcer *Boston Medical and Surgical Journal* 1926 cxv 988

The experimental production of peptic ulcer in animals has not revealed the entire cause of the lesion in man. Mayo believes that the gastric tissues are vulnerable to attacks by bacteria under certain conditions which impede or interrupt the capillary circulation in the mucosa. He suggests that spasm of the muscles and vessels in response to disturbance of the sympathetic nervous system is the ultimate cause.

Hæmorrhage occurs in about 25 per cent of the cases, but in only one third of these is it serious. Severe hæmorrhage is usually followed by long remissions of all of the symptoms. The absence of symptoms in cases in which healed ulcer is unexpectedly found at autopsy is attributed by the author to variation in sensitiveness of different areas of the mucosa.

It is to the best interests of the patient for the internist to re-assume control of his diet and general care after operation. On the other hand there are occasions when the surgeon is justified in interfering, such as when prolonged medical treatment is ineffective and when stomatal ulceration follows a short circuiting operation.

A review of the progressive steps in surgery of the stomach from Billroth's operation to the operation of Polya leads up to a discussion of the merits

of gastric resection in the treatment of duodenal ulcer Mayo believes that this type of operation is too extensive for the purpose and that it should not be used generally until time has disclosed its true merits It was proposed in the hope that it might materially lower the incidence of gastrojejunal ulcer Since in most cases this lesion does not appear for two or three years, the Pólya operation can be compared with it only after that lapse of time Gastrojejunal ulcer has already followed resection of the stomach the author has seen two cases

- Connor C L The Etiology and Pathology of Peptic Ulcer *Boston M & S J* 1926 cxv 971  
 Davis E L The Diagnosis of Peptic Ulcer by X Ray *Boston M & S J* 1926 cxv 977  
 Lahey F H The General Management of Peptic Ulcer *Boston M & S J* 1926 cxv 980  
 White F W The Medical Aspects of Peptic Ulcer *Boston M & S J* 1926 cxv 983

CO NOR considers the relation of the development of peptic ulcer to the anatomy and physiology of the stomach and duodenum The pylorus the pyloric antrum and the part of the lesser curvature near the cardia are subject to great mechanical disturbances This region possesses its own muscular system The duodenal bulb forms a pouch where stasis may occur and result in the chronicity of an ulcer

The peculiarities in the blood vessel distribution about the pylorus and duodenum may have a great deal to do with the occurrence of acute ulcers The blood supply of the fundus and greater curvature varies greatly from that of the lesser curvature and pylorus The right and left gastroepiploic arteries anastomose with each other and with branches from the gastric artery The gastric pathway is supplied only through recurrent branches of the gastric and pyloric arteries Blocking of these arteries may play an important role in the development of pyloric ulcer

The pylorus is the acid retaining part of the stomach Here in addition to mechanical disturbances there is a greater acid concentration From these facts Aschoff developed his mechanical functional theory of ulcer and Sippy his medical treatment of peptic ulcer

Moyzhan attributes peptic ulcer to excessive smoking and hypersecretion Montgomery produced four ulcers in a series of sixty gastroenterostomies in dogs and concluded that the ulcers develop from hæmatomata in the suture line Moyzhan and many others believe that a subtotal gastrectomy with removal of the acid secreting mucosa of the stomach will prevent the recurrence of ulcer and the development of gastrojejunal ulceration

Rosenow found streptococci predominating in thirty one of forty chronic ulcers Intravenous injections of the streptococcus into rabbits produced ulcers in a large percentage Under similar experimental conditions other bacteria also produce mucosal hæmorrhages and ulceration There is

abundant experimental proof that many ulcers are of hæmatogenous origin

Stewart believes that bacterial infection and intoxication are the most important direct causes of acute gastric and duodenal ulcers He found fifty three acute ulcers in 1500 autopsies Most of them were associated with acute suppurative disease elsewhere in the body

Chronic ulcers develop on acute or subacute lesions Most acute ulcers of the peptic type in man are due to hæmatogenous streptococcal infections emboli or thrombo es The peculiarities of the blood supply of the pylorus favor the occurrence of such lesions in the pyloric area The chronicity of ulcer may be explained by continuation of the infection great loss of normal tissue endarteritis with resulting poor blood supply and inaccessibility of the lesion to treatment

DAVIS says that the examination of the gastrointestinal tract with the X ray and opaque meal is now generally accepted as the most accurate method for ulcer diagnosis The best results are obtained by the combined use of the films and the screen At operation the ulceration is usually found to be a small shallow erosion of the mucosa, penetrating an ulcer with a deep crater a perforated ulcer or a carcinomatous ulcer The perforative type of ulcer with the formation of an accessory pocket outside of the stomach is usually the most readily demonstrable Early carcinomatous ulcers are not as a rule to be distinguished from benign ulceration

The roentgen signs may be conveniently divided into two classes

- 1 Primary and practically pathognomonic sign (a) the niche (b) the accessory pocket (c) a constant deformity of the duodenal bulb
- 2 Secondary and corroborative signs (a) the incisura (b) the spasmodic hourglass deformity, (c) gastrosphincter spasm

In a fair percentage of cases the positive signs cannot be demonstrated when the ulcer is situated on the posterior wall of the duodenum or stomach Under such circumstances the diagnosis must be based on the indirect phenomena When the incisura or indentation of the gastric wall opposite the supposed ulcer site is constant it is almost positive evidence This incisura must persist after bella donna treatment

A residue from the barium meal after six hours is very often associated with gastric ulcer Constant deformity of the duodenal bulb is an important sign Nine tenths of all duodenal ulcers occur in the bulb and on the anterior wall Occasionally however the bulb may be deformed from pericholecystitis cystic adhesions or adhesions postoperative None of the secondary signs alone is diagnostic of ulcer Only about one person in ten with gastric symptoms has an ulcer The relative frequency of gastric and duodenal ulcer is estimated at 13 or 14 The accuracy of diagnosis varies with the ability and experience of the examiner The average roentgenologist should be able to make a correct diagnosis

in from 75 to 80 per cent of cases. The site of the ulcer is of greater importance than the size of the lesion. The clinical findings and history must also be considered.

LAHEY is convinced that gastric and duodenal ulcer are in no way primarily surgical diseases. They become surgical only when they have been demonstrated to be non medical in the course of medical treatment. It is unjust to subject patients with ulcer to surgery without a careful trial of medical management. Because of the postoperative complications of gastro enterostomy such as jejunal ulcer, the higher mortality of partial gastrectomy, and the uncertain future for the achylic stomach, the surgeon operating for peptic ulcer should be certain that a thorough pre operative medical regime has been tried. Lahey uses the Sippy plan of treatment, and hospitalizes the patient for three weeks if necessary. During this time the diagnosis is established, relief of symptoms is obtained, and the patient is taught the dietary routine he must follow for the coming year.

Surgery is indicated definitely when pain cannot be relieved by frequent feedings and alkalinization, when perforation complete or incomplete, is demonstrated by the X ray, and when there are recurring hæmorrhages with persistent blood in the stools. The occurrence of a single large hæmorrhage or of frequent hæmorrhages in the case of a patient who has never received medical treatment does not contraindicate a course of medical treatment.

Pyloric obstruction due to scar tissue is a certain indication for operation, as is also carcinoma of the stomach. Gastro enterostomy is indicated for duodenal ulcer resisting medical cure. Partial gastrectomy should be reserved for the large bleeding or penetrating ulcers of duodenal or gastric origin which have resisted medical therapy. Lahey agrees with Finsterer that partial gastrectomy removes the ulcer and acid bearing area, gives lasting relief of the symptoms and greatly reduces the danger of jejunal ulcer, but he accepts this operation with its higher mortality and persistent achylia only for cases of malignant gastric lesions and those in which a grave suspicion of malignancy is warranted. In conclusion he emphasizes that the surgeon treating cases of peptic ulcer must accept the responsibility for proper pre operative and postoperative medical treatment.

WHITE states that in the past the surgeon has had the advantage over the physician in the treatment of peptic ulcer because he could see and palpate the ulcer. The physician has been treating many ulcers for "hyperacidity," and it is probable that many patients have been treated for ulcer when the condition responsible for the symptoms was gall bladder disease or appendicitis. Therefore the older medical statistics on ulcer are unreliable.

Today, peptic ulcer is diagnosed correctly by combined methods without operation in 90 per cent of the cases. This is due largely to careful X ray examination which not only reveals the deformity

caused by an ulcer but also rules out pathological conditions in the gall bladder and gastro intestinal tract in general. At the present time the diagnosis of duodenal ulcer is one of the most definite of clinical diagnoses.

In the selection of cases for medical treatment cases with complications such as hæmorrhage, obstruction, and perforation must be excluded. Medical treatment gives better results in duodenal ulcer than in gastric ulcer and in the cases of persons under 45 years of age than in those of persons who are older. The most favorable cases are those with a short ulcer history, short attacks, and long remissions, and those of patients who are intelligent and willing to see the physician occasionally during an observation period of a year or two.

The plan of medical treatment must be simple and practicable. Most persons cannot afford long periods of hospitalization. A bland diet, consisting at first of milk and egg or milk and cream or cereal gruels is indicated. Frequent feedings are important; they should be given six times daily or oftener at the beginning. Alkalies are very beneficial. Atropine relaxes spasm and checks hypersecretion. Bismuth is of some value. The use of tobacco should be restricted or prohibited. Foci of infection must receive proper attention. Medical treatment has no immediate mortality and results in a lasting cure in from 50 to 60 per cent of cases of duodenal ulcer and about 30 per cent of cases of gastric ulcer.

Most important is the proper education of the patient, the removal of infection, and the prevention of recurrences. A good follow up system is essential. It is unwise for the young surgeon to operate upon many uncomplicated duodenal ulcers in young persons with long remissions. It is generally agreed that medical treatment is safest for the first gross hæmorrhage in ulcer. Ninety per cent of patients recover from acute hæmorrhage even if the bleeding is severe. Recurrent bleeding under medical care indicates preliminary blood transfusion plus surgical excision of the ulcer.

A careful follow up continued for from three to five years showed that of 154 patients treated medically for duodenal ulcer, 57 per cent were cured, and of fifty four treated medically for gastric ulcer, 30 per cent were cured. These percentages appear relatively low because of the length of the period of observation. In 18 per cent of the cases of duodenal ulcer and 42 per cent of those of gastric ulcer surgical treatment was given. In the surgically treated cases of gastric ulcer there were two deaths.

The percentage of gastric ulcers that later developed carcinoma has been reported as high as 71 per cent and as low as 2 per cent. In White's series only one case of gastric ulcer developed carcinoma.

In conclusion White says that earlier diagnosis will materially improve the results of both the medical and the surgical treatment of ulcer. If medical treatment fails surgical treatment is indicated. Better medical treatment means frequent feedings, better care during the remissions, better education

of the patient and a careful follow up system. The most logical procedure is medical treatment for the early, mild uncomplicated cases and surgery for chronic or complicated ulcers. Surgery is of value chiefly for the serious and difficult cases.

JOHN W. NUTZ, M.D.

**Jordan S. M.** The Calcium Chloride and Carbon Dioxide Content of Venous Blood in Cases of Gastroduodenal Ulcer Treated with Alkalies. *J Am Med Ass* 1926 LXXVII 1906

In a series of 100 cases of gastroduodenal ulcer treated at the Ivey Clinic the author studied the relationship of alkalemia (or disturbance of the acid base equilibrium toward the alkaline side) to the Sippy treatment of ulcers. The clinical symptoms of alkalosis were noted in three cases. In the ninety-seven others there were no untoward symptoms although very large amounts of alkalies were administered over a period of from six to twelve months.

Forty-one patients with ulcer and ten normal persons were studied over a period of three weeks, the former at the beginning of their management according to the Sippy method and the latter at their usual activities and ingesting no alkalies not contained in their usual diet. All of those with ulcer made a satisfactory clinical progress without signs of alkalemia.

A comparison of the results in the two groups of cases showed a wide variation with higher maximum and lower minimum levels for calcium chloride and carbon dioxide contents in the cases of ulcer than in the normal persons. In the ulcer cases the average level of plasma chloride in the venous blood was lower by 23 mgm per 100 ccm and the average level of carbon dioxide content was higher by 7.7 per cent by volume than in the normal cases. The average serum calcium content was approximately the same in both.

These estimations suggest that the acid base equilibrium is at first somewhat disturbed by the influx of alkalies but within a few days the levels of the chloride and carbon dioxide contents approach the normal and in the great majority of cases there is no chemical or clinical disturbance due to alkalosis. In the small percentage of cases that show clinical signs of alkalemia the carbon dioxide content shows a marked rise, the calcium content tends to rise and the plasma chloride tends to diminish. The level of carbon dioxide content at which symptoms appear in these cases is 70 per cent by volume. This has been taken as an index and anything over it is regarded as beginning alkalemia indicating a reduction in the alkalies.

ARTHUR L. SHREFFLER, M.D.

**Brunn H. and Pearl F.** Diffuse Gastric Polyposis—Adenopapillomatosis. Gastric Report of Five Proved and Seven Probable Cases. *Surg Gynec & Obst* 1926 LXVI 559

Gastric polyposis may be congenital or arise from an inflammatory condition. It may appear as dis-

tinct polyps of an adenomatous character or as slightly elevated hypertrophic plaques *en nappe*. The latter may have a telangiectatic origin.

The disease frequently runs a course without symptoms and may be discovered only at autopsy. When symptoms are present they are of the same type as those associated with other gastric disorders viz. epigastric discomfort, distention, vomiting, etc. Abdominal pain or distress occurred in 28 per cent of the cases reviewed by the authors. The nearly constantly present anacidity is often manifested by diarrhea, vomiting, anorexia, constipation, and weakness were each present in about 17 per cent of the cases reviewed, and hæmatemesis occurred in 8 per cent.

The most valuable diagnostic aid is the roentgenogram. The diagnosis is facilitated also by gastroscopy and examination of shreds from the gastric washings. The characteristic X-ray finding consists in irregular defects in the margin of the gastric shadow at the site of the tumors. The masses projecting into the gastric lumen produce in the barium shadow an indentation with ragged edges and as a rule a streak of barium continues along the curvature of the stomach extending through the lesions for a variable distance.

The differentiation of gastric polypoid from carcinoma is based upon the fact that in malignancy the defect is usually annular involving both curvatures, the gastric wall at the site is obliterated and the defect increases in size fairly rapidly.

The treatment of gastric polyposis is surgical. As much of the tumor-bearing area as possible should be excised. The remaining tumors should then be individually excised, their bases cauterized thoroughly, and the defect in the mucosa closed by suture.

HOWARD A. MCKNIGHT, M.D.

**Parham F. W.** Some Practical Problems in Intestinal Obstruction. *New Orleans M & S J* 1926 LXXIX 304

Intestinal obstruction is characterized by abdominal pain coming on suddenly as colic with tenderness, vomiting which is more or less persistent according to the location of the obstruction and progressive distention without marked muscular rigidity. If the symptoms are present and there is a history of constipation persisting for longer than usual and two enemata given an hour or two apart fail to produce any results, operation is indicated without further delay.

Pathologists and surgeons agree that there is a poison generated in the occluded intestine which gives rise to a toxemia and the toxemia is the cause of death.

Jejunotomy should be done by the Long-Witzel valvular method. Every possible inch of the upper intestine should be made available for lavage and the introduction of nutriment. In any advanced case in which a jejunostomy is done it is well to add a cæcostomy, the lower drainage being of decided advantage.

In intestinal obstruction there is at first a fall of chlorides in the blood and then a rise in the non-protein and urea nitrogen and the carbon dioxide combining power. The rise in the carbon dioxide combining power is probably an incident in chloride metabolism in which sodium ions are set free uniting with carbon dioxide to form bicarbonates and thereby causing an alkalosis. The chlorides seem to exercise a protecting influence, holding in check the non-protein nitrogen rise and the carbon dioxide combining power. The addition of chlorides to the blood will delay the development of the toxic effects and their early use in conjunction with drainage of the obstructed intestine will often bring about a decided amelioration and sometimes prompt recovery.

The intravenous injection twice daily, of from 500 to 700 ccm of a 1 per cent solution of sodium chloride will maintain life, whereas without such injection death occurs within three or four days. The combination of glucose with chlorides and sufficient water greatly assists the elimination of the urea and non-protein nitrogen and stops the further accumulation of these substances.

When an obstruction is released by operation, reverse peristalsis sometimes carries the fecal contents rapidly up into the stomach, and vomiting results in drowning if the glottic reflex has been abolished by the anæsthetic. At the first sign of this complication the patient's head should be lowered and gastric lavage given until the regurgitation is stopped. The anæsthetic is of importance also on account of its damaging effect on the liver in patients who are poor risks. In such cases nitrous oxide and oxygen and ethylene are the anæsthetics of choice.

Venoclysis or the Matas intravenous drip may render invaluable service. MORRIS H. KAHN, M.D.

**Williams B. W.** The Importance of Toxæmia due to Anaerobic Organisms in Intestinal Obstruction and Peritonitis. *Brit J Surg* 1916 XIV 295

The resemblance of the clinical manifestations in acute peritonitis, acute intestinal obstruction and the toxæmia associated with gas gangrene suggested to the author the possibility of a common cause underlying these conditions and led to a study of the abnormal proliferation of anaerobic organisms in the obstructed intestine.

Of the various anaerobic bacteria found in the human intestines, the bacillus welchii is by far the most abundant and most constant toxin-producing organism. Under normal conditions the lower part of the small intestine is the only part of the bowel suitable for its proliferation, but in obstruction of the bowel it is found in increasing numbers higher up in the intestine, eventually being present in the vomitus.

Employing accepted bacteriological standards with suitable controls the author found the bacillus welchii almost constantly in the vomitus in cases of acute obstruction and advanced cases of peritonitis in man and experimental animals.

A toxin elaborated by the Welch bacillus was clearly demonstrated. It was extremely labile, rapidly destroyed by heat or variations of acidity, non-dialyzable and lethal to mice. It filtered through a Berkfeld candle very slowly. A considerable concentration of this toxin was found to be present in the small intestines in cases of peritonitis and obstruction. No such toxin was demonstrated in cases of obstruction of the large intestine or in the normal human ileum.

Both clinical and histological evidence has convinced the author that the absorption of bacillus welchii toxin in intestinal obstruction and peritonitis is the same.

As anti-gas gangrene serum had been found of value in the treatment of gangrenous appendicitis in France, it was decided to administer this serum in a series of severe cases of appendicitis with peritonitis. In eighteen cases so treated there were only three deaths, a mortality of 17 per cent. The clinical effects were often striking and immediate. Restlessness was greatly diminished or abolished, cyanosis disappeared, the pulse rate fell rapidly, distention disappeared, and the bowels moved spontaneously within a few hours.

Because of these good results, the anti-gas gangrene serum was administered for the toxæmia in nineteen cases in which operation was performed for intestinal obstruction. The author states that he has been unable to find any record of the use of this serum in this condition before. The clinical improvement following the treatment was similar to that occurring in peritonitis and the mortality was reduced from 24.8 to 9.3 per cent.

Williams emphasizes that the use of the antitoxin in no way alters the accepted surgical treatment of intestinal obstruction or the removal of the causes of peritonitis. It is advocated solely to combat the toxæmia of intestinal origin consequent upon stagnation of the contents of the small intestine, a toxæmia which otherwise cannot be dealt with successfully. It is suggested that the serum should be used routinely whenever there is evidence of small bowel involvement and continued until the small intestine is functioning normally and the evidences of the toxæmia have entirely disappeared.

The serum used in the cases reviewed was anti-gas gangrene serum containing bacillus welchii and vibrio septique antitoxins. The initial dose recommended is at least 80 ccm given intramuscularly and 40 ccm given intravenously. Following this, from 30 to 80 ccm should be given intramuscularly every day until the evidences of toxæmia and obstruction have subsided. Intravenous and intramuscular administration as a prophylactic measure is suggested.

The author states that the experiments reported are the first to indicate the presence of a true toxin of intestinal origin, its nature, and the conditions necessary for its production.

DOUGLAS K. HUTCHENS, M.D.



**Smith J F and Christensen H H Intestinal Fistula a Method of Preventing Skin Excoriation** *Surg Gynec & Obst* 1926 lxxvi 701

High fistule of the intestines are very difficult to treat. The intestinal enzymes cause digestion of the skin with burning and pain. The patient soon learns that his discomfort follows the ingestion of food and refuses to eat.

In the authors' method of preventing excoriation of the skin in such cases the enzymes are inhibited by their absorption in inorganic substances. The substance preferred is kaolin which is readily available, easily sterilized, inexpensive and suitable for a surgical dressing. A thin paste of kaolin prepared with glycerine is applied to the skin surrounding the fistula and covered with a generous layer of dry kaolin to absorb the escaping fluids. At first this dressing is renewed every five or six hours but after contraction of the fistula two such dressings in twenty four hours are sufficient.

HOWARD A. McKNIGHT M D

**Stallman J F H Chronic Intussusception in Children** *Ann Surg* 1926 lxxvi 735

Chronic intussusception is a rare form of chronic intestinal obstruction which occurs usually in adults. The cause is a tumor. In the infant primary intussusception is seldom associated with a tumor, ulceration or tuberculosis of the bowel.

Chronic intussusception may exist without any symptoms of intestinal obstruction; the bowel movements may be normal and blood and mucus may be absent.

As a rule there is excessive mobility of the cecum due to an abnormally long mesentery.

This article is based on nine cases of chronic intussusception occurring among 11 cases of intussusception of all kinds admitted to the Hospital for Sick Children, London, during a period of five years. Seven of the patients were males. The youngest child was 8 months old and the oldest 11 years. The average age was 4 years and 10 months.

It is extremely important that the condition be recognized early, before the irreducible or permanent stage is reached. Cases of permanent intussusception do not develop intestinal obstruction early. Death results from peritonitis caused by bursting of the intussusception and not from the intestinal obstruction *per se*. After the invagination of the bowel becomes permanent it cannot be reduced even at autopsy, and resection is usually too severe an ordeal for the patient.

The basic diagnostic signs are intermittent colicky pains and tumor formation. Often the initial symptoms are vague and misleading. Attacks of abdominal colicky pains are a constant feature. They vary in frequency from weeks to months. The onset is usually sudden and severe. Vomiting usually occurs at the onset. Blood may be absent from the stools. Blood and mucus were present in five of the author's cases. Absolute constipation strongly suggests a terminal pathological condition.

In four patients the patient's mother first noted the presence of a lump in the abdomen during the attacks of colic. In eight a tumor was felt upon clinical examination. Anorexia and rapid wasting were prominent features.

The mere invagination of one segment of intestine into another is not sufficient to produce intestinal obstruction. Inflammatory hyperemia and edema are chiefly responsible for obstruction and the interference with the blood supply of the intestinal walls. Necrosis and ulceration of the bowel walls finally occur with the passage of blood and mucus and a permanent irreducible intussusception develops.

The presence of a primitive mesentery to the colon will permit the head of the intussusception to travel far before obstruction occurs. The long mesentery of the ileum allows it to pay out considerably before vascular occlusion results. Hence in ileocecal intussusception the symptoms are often mild and indefinite for a considerable length of time.

The presence of an abdominal tumor together with emptiness of the right iliac fossa (Dunce's sign) are valuable diagnostic points. Violent abdominal pain followed by nausea and vomiting is often a surgical condition unless true diarrhea soon intervenes.

The author suggests that all intussusceptions may be acute with common diagnostic features but varying in degree according to the changes in the bowel wall.

JOHN W. ALZUM M D

**Alvarez W C A Practical Treatment of Duodenal Ulcer** *J Am M Ass* 1926 lxxviii 886

Only eleven of 100 patients with duodenal ulcer questioned by Alvarez had had what might be called a Sippy cure and only eighteen more had been given food between meals. It was apparent from this study that the general practitioner is not doing much for his patients with ulcer. This is because the text books tell him only of the Sippy treatment which although good is too complicated for him and too expensive for the patient. The result is that he prescribes an alkaline powder and lets it go at that.

What he needs is the simplest possible ambulant treatment, one that he will prescribe and his patients will follow. In searching for such a treatment Alvarez found that the essential factor is the giving of food every two hours. With that alone most patients with uncomplicated ulcers get immediate and complete relief from their distress. In many the period of arrest is at least as long as it is usually after Sippy cures.

**Haberer H Peptic Ulcer of the Jejunum** (Zur Frage des Ulcus pepticum jejuni) *Arch f klin Chir* 1926 cxi 395

The author discusses peptic ulcer of the jejunum on the basis of sixteen cases which he studied very thoroughly. The development of peptic ulcer of the jejunum is not influenced to any great extent by the nutrition nor the operative technique. Even in the not rare cases in which the roentgen examination fails to show evidence of the condition the diagnosis

is easily made from the general clinical symptoms, especially tenderness to pressure in the region of the new outlet of the stomach.

Examination of the stomach contents usually shows high hydrochloric acid value in relation to the total acidity. It is important to remember that even extensive resection of the antrum causing a marked decrease in the hydrochloric acid may be followed by peptic ulcer. Haberer assumes that in these rare cases there is misplaced pyloric mucosa in the duodenum and that when duodenal stasis occurs this precipitates the second chemical phase in the stomach which may lead to peptic ulcer of the jejunum.

The location of the ulcer is usually in the region of the anastomosis near the attachment of the mesentery. It is sometimes very difficult to find. The best guide to it are the glands in the mesentery of the loop used in the gastro enterostomy and the inflammatory thickening of the mesentery.

VORDERBRUEGGE (Z)

**Adams J E** *The Surgery of the Jejunum* *Brit J Surg* 19 6 xiv 343

Traumatic lesions of the jejunum include crushing tearing and bursting. The most common cause of intestinal rupture is a direct blow over a small area of sufficient force to produce temporary approximation of the opposite walls of the gut. The extent of the lesion depends upon the state of distention and fixation of the bowel.

A forcible blow on the abdomen over a limited area is alone a sufficient justification for abdominal exploration. It must be borne in mind that marked acceleration of the pulse, recurrent vomiting, diminution of liver dullness and the presence of abdominal rigidity are late signs of intestinal rupture. The prognosis of rupture of the jejunum is governed chiefly by the state of fullness of the gut and the time which elapsed between the injury and the operation.

In suturing marked narrowing of the bowel lumen must be avoided. When the rupture is extensive resection may be necessary. Up to two fifths of the length of the small intestine may be removed with little disturbance of metabolism.

Obstruction of the jejunum if unrelieved soon terminates fatally. Probably the most common cause is adhesions. Intussusception and volvulus are rare. Many investigations have been made to explain the high mortality in obstruction of the small bowel. It is generally believed that the cause is a severe toxæmia due to the absorption of toxic material elaborated within the obstructed bowel. The source of these toxins is still a subject of controversy, some believing it to be the mucosal wall and others bacterial activity. The most toxic products are the proteoses. A most important contributory factor in toxic absorption is paresis of the jejunum.

New growths are rare in the jejunum. Primary carcinoma of the jejunum is a pathological curiosity.

Sarcoma occurs occasionally and may be the exciting factor in intussusception. Benign tumors are rare. The most common benign tumors are the fibroma, myoma, lipoma, and adenoma but these constitute only one fourth of the total number of tumors of the small intestine.

The author discusses briefly cysts and congenital atresia of the jejunum, both of which are unusual conditions.

Primary ulcer of the jejunum with or without perforation is rare, but ulceration following gastro jejunostomy is not uncommon. Factors believed to contribute to the occurrence of jejunal ulceration after gastrojejunostomy are the use of non absorbable suture material and of clamps in the operation and trimming of the mucosa in the formation of the jejunal stoma.

The symptoms of jejunal ulcer are comparable to those of duodenal ulcer. Hunger pain is often a prominent feature. The only physical sign of much value is tenderness to the left and a short distance above the umbilicus. Various roentgenographic abnormalities are mentioned as suggestive of ulcer, a filling defect is rarely seen.

Jejunostomy is of value for several purposes. In some cases it may be indicated for feeding. Food introduced into the jejunum will maintain the patient's nutrition and after a few days this method of feeding is well tolerated. The formation of a jejunal fistula is of value also for jejunal drainage which is an essential measure for the relief of intestinal toxæmia.

The author describes the technique of jejunostomy. A winged catheter is best. After its emergence the tube should be buried in the side of the intestine for a short distance and anchored to the rectus sheath and skin. If possible it should be delivered through a portion of the omentum. The operation may be performed under local anaesthesia through the upper fibers of the left rectus muscle.

Jejunostomy may be successfully substituted for gastrostomy in carcinoma of the œsophagus and inoperable cancer of the stomach. It may be employed also for bleeding gastric and duodenal ulcers, particularly inoperable ulcers and may be combined with gastro enterostomy. In the cases of poorly nourished patients with gastric ulcer this operation may be performed as a preliminary to gastrectomy.

In the second stage of intestinal obstruction which is characterized by distention of the bowel, the obstruction must be relieved but in addition a temporary jejunostomy is advisable. In the third stage, in which the patient's condition does not warrant an abdominal exploration only relief of the distention by jejunostomy should be done at first, the removal of the cause of the obstruction should be delayed. Adams prefers to open the bowel in the jejunum in such cases because the toxicity of the contents is believed to be highest at this level. Jejunostomy is recommended also for certain cases of paralytic ileus and peritonitis.

DON K. HUTCHINS MD

**Haden R L and Orr T G Experimental High Jejunostomy in the Dog with Blood Chemical Studies** *J Exper Med* 1926 xlv 795

Dogs with simple high drainage of the jejunum lived from two to five days. This is a shorter average length of life than that following simple obstruction at the same location. The chemical changes in the blood are similar to those occurring in high intestinal obstruction but differ from those of pyloric and duodenal obstruction in that the carbon dioxide combining power does not show any constant change and the chlorides do not show such a marked fall.

Ileostomy 12 in. above the cæcum did not produce the profound disturbance of high jejunostomy.

Treatment with sodium chloride solution definitely prolonged the life of dogs after high jejunostomy. The cause of rapid death following high jejunostomy apparently differs from that of death following high intestinal obstruction. Sodium chloride will not protect to a great extent following high jejunostomy as in high intestinal obstruction.

Whether the cause of death is dehydration, toxæmia, loss of chlorides or loss of other important elements is not known. SAMUEL KAHN MD

**Hays G L Pneumatic Rupture of the Bowel** *Surg Gynec & Obst* 1926 xlvii 491

In a review of the literature Hays found that pneumatic rupture of the bowel is a very uncommon accident. He was able to collect the reports of only thirty-two cases. The first case was reported by Stone in 1904. In 1911 Andrews reviewed seventeen cases including one of his own.

Hays reports the case of a 30 year old man who worked in a mill. It was the practice of the employees in this mill to use an air hose to dust their clothes when they finished work. The patient held the nozzle of the air hose too near the buttocks forcing the air into the rectum.

He was seen by the author thirty minutes later in severe shock with a weak and rapid pulse and tenderness and marked muscular rigidity over the entire abdomen. The inguinal canals were more prominent than normal and the umbilical depression was absent.

Operation was performed one hour and fifty minutes after the accident. A rupture was found in the rectum distal to the end of the sigmoid. The serosa was separated in two or three areas and the peritoneum markedly congested. Free air and fecal material were found in the abdominal cavity. The perforation was carefully closed and the separated serosa repaired. A tube extending above the point of rupture was left in the rectum and the sigmoid was sutured to the peritoneum through a McBurney incision so that it could be easily opened later if necessary.

On the following day the sigmoid was opened at the site of the peritoneal suture on account of distention. On the second day a cæcostomy was done as no relief was obtained from the opening of the sig-

moid. Nine days after the operation the patient became semi-stuporous presumably as the result of the fluid loss occurring through the cæco-tomy opening. It was therefore deemed advisable to close the cæcal opening in such a way that it could be reopened easily if necessary. This was done by introducing a Barnes dilator and inflating it. The patient's condition almost immediately came back to normal. Herniæ developed in both incisions and were repaired at a later time. The cæcostomy opening was also repaired.

The patient made a complete recovery and returned to work.

The author reviews twenty-two cases from the literature. The mortality in these cases was 60.5 per cent. The high death rate was no doubt due partly to the length of time which elapsed between the accident and the operative procedure. This interval ranged from one hour and fifty minutes (in the author's case) to four days. The patients who recovered after operation were all operated upon within six hours. Two recovered without operation but it was impossible to state definitely that they had a perforation of the bowel.

The treatment of these cases is entirely operative. The sooner they come to the operating table the greater the chance for recovery. A paracentesis of the abdomen to permit the escape of air before the operation is probably advisable as the patient's condition is usually improved immediately by the removal of pressure from the diaphragm.

The patient's condition and the pathological changes found suggest the type of operation most applicable. The operative procedures vary from simple closure of the ruptured bowel to resection of the intestine followed by end to end or lateral anastomosis.

A colostomy above the point of the anastomosis to relieve pressure is essential.

HAROLD M CAMP MD

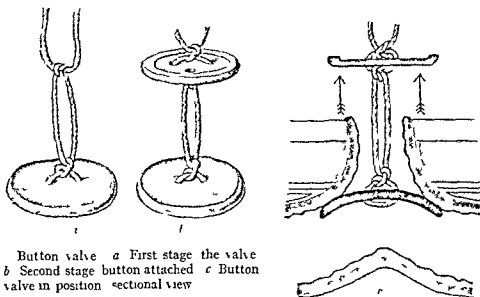
**Upson W O The Technique for Roentgenological Study of the Colon** *Am J Roentgenol* 1926 xvi 419

A reliable accurate and complete report on pathological conditions and abnormalities of the colon depends largely upon the roentgen examination. In order to obtain a thorough understanding of the condition such an examination must be made with great care and if possible should include observations made after the ingestion of an opaque meal and after the injection of an opaque enema.

The author gives a detailed description of the technique used at the Battle Creek Sanitarium, Battle Creek, Michigan, together with observations which serve to differentiate the normal from the pathological colon.

The article contains numerous roentgenograms showing different types of conditions and how they may be demonstrated by rotation or manipulative aid.

ADOLPH HARTUNG MD



Button valve a First stage the valve  
b Second stage button attached c Button  
valve in position sectional view

*Carwardine—The Extraperitoneal Closure of the Artificial Anus (Greig Smith's Method)*

**Perman E The Operative Treatment of Cancer of the Colon** *Acta chirurg Scand* 1926 lvi -57

In the method of resection described the two intestinal loops after sufficient mobilization, are jointly grasped in one clamp and the gut is divided at some distance from this point. The intestine is then sutured end to end. As the suturing is done with the exposure of a strip of intestinal mucous membrane from 1 to 2 cm wide this method is not as aseptic as the procedures in which the intestinal suturing is done with the lumen closed. However, it has great technical advantages and is associated with no greater danger of peritonitis than other procedures. The latter was demonstrated by the absence of reaction in several of the cases operated upon during the last year, the temperature curves of which are shown.

In fifty seven cases of carcinoma of the colon, including the sigmoid flexure, there were sixteen deaths after the operation but in only six of the fatal cases was the death due to peritonitis. In twenty nine cases of carcinoma of the cæcum the ascending colon or the descending colon there was no case of peritonitis after the operation. In nine cases of ileocaecal resection for tuberculosis or chronic typhlitis there was one death, and in nine cases of sigmoid megacolon without acute ileus there was no death after the resection.

**Hecker J P Grunwald J E and Kuhlmann C J The Malformations and Displacements of the Large Intestine and Their Surgical Importance** *Am J Surg*, 1916 1: 344

Malformations and displacements of the colon are very interesting not only embryologically but also clinically. They are not frequent. In most cases the condition is discovered at autopsy, but in some, as in Hecker's case, it is revealed by roentgenographic examination.

Most colonic ectopias are dispositions resulting from insufficiency of normal rotation of the primitive intestinal loop, inverse rotation, or deficient fixation. Hecker classifies colonic dystopias embryologically into two groups: those resulting from faulty rotation (absence of all rotation, insufficiency of normal rotation, insufficiency of inverted rotation), and those resulting from insufficient fixation (ptosis of the splenic flexure, ptosis of the hepatic flexure).

The absence of rotation predisposes to dilatation of the colon and acute occlusion; several angulations predispose to occlusion or volvulus. Absence of fixation of a flexure and excessive length render the diagnosis of appendicitis difficult.

The author reports a case of sinistro colia.

HERMAN H. HUBER, M.D.

**Carwardine T The Extraperitoneal Closure of the Artificial Anus (Greig Smith's Method)** *Brit J Surg* 1926 xiv 39

Carwardine calls attention to the method of closing the artificial anus devised by Smith in 1895. The aim of the operation is to perform enterorrhaphy without opening the general peritoneal cavity.

The preliminary treatment consists in division of the spur and restoration of the natural channel by mechanical means. This is accomplished most satisfactorily by the application of Dupuytren's enterotome. The compression should be gradually increased each day; complete obliteration of the spur should take from five to seven days. Tying the patient's hands and attaching a large cork disk to the clamp are advocated to prevent accidental displacement.

The next step consists in the introduction of Banks' tube which serves the double purpose of dilating the contracted efferent loop and pressing back the spur. Later a button valve may be inserted.

This consists of a soft rubber disk applied to the inside of the stoma and held in place by attaching to it a rigid button as shown in the figure

The extraperitoneal closure is effected in four stages as follows

- 1 An oval incision is made down to the subperitoneal tissue wide enough to include a portion of the contiguous skin

- 2 The bowel is separated from the overlying muscle and aponeurosis over an area of 2 or more inches and then delivered. Free mobilization is essential to the success of the operation

- 3 After the superfluous tissue has been trimmed away the edges are sutured with inverting continuous catgut sutures

- 4 The wound is closed by several silk worm gut or silver wire sutures including all layers of the abdominal wall down to the peritoneum and a drainage tube is inserted at each angle of the wound

Following this technique natural defecation is the rule. There may be some fecal drainage but this soon ceases. Occasionally the whole wound breaks down but after an interval of two or three months the operation may be repeated successfully.

In the absence of serious complications the mortality is under 5 per cent. The method has the disadvantage of tediousness but this is amply compensated for by the lower mortality. It is claimed to be equally effective for the small intestine.

DOV K. HUTCHENS M D

Feissly R. A Contribution to the Radiological Diagnosis of Ileocecal Tuberculosis. *Brit J Radiol* 1926 xxv 498

From the roentgenological point of view ileocecal tuberculosis has two different aspects. In one group of cases ulceration of the mucous membrane seems to be the dominating condition and infiltration of the wall is of minor importance. The cæcum is therefore quite clear in the roentgenogram and the barium accumulates in the inferior ileum and the transverse colon. In the other group of cases infiltration of the cæcum is the dominating condition and simple ulceration appears in the adjacent segments of the colon. In some cases roentgenography shows a malformation of the cæcum due to rigidity of the organ.

The author presents roentgenograms of cases illustrating the two types. One of the cases is of special interest because of the unusual roentgen findings which were subsequently explained by the postmortem findings.

ADOLPH HARTUNG M D

Van Zwaluwenburg C. The Cause of Acute Appendicitis: the Hydromechanics in Acute Appendicitis. *California & West Med* 1926 xxv 612

The author's conception of the etiology of acute appendicitis is based on a hydromechanical theory. The initial step is the formation of a closed pouch by the lodgment of a plug of fecal material, a fecolith or debris behind a constriction or narrowing in the lumen of the appendix. It is generally known that fecal material passes quite freely into and out

of the normal appendix from the caput coli. Acute appendicitis is a strangulation like abscess formation.

The blood supply to the appendix through the arteries and arterioles has an approximate pressure of 125 mm Hg. The veins and lymphatics remove the fluid from the tissues at a pressure of from 0 to 20 mm Hg. The arteries continue to carry blood to the appendix after the lymphatics and veins of the appendix have been compressed and the afferent flow has been obstructed. Thus oedema and inflammatory hyperemia are brought about.

Often the fecolith acts as a ball valve plug permitting a sudden gush of fluid from the cæcum into the appendix where it lodges behind the plug or concretion. The pathogenic bacteria present in the lumen of the appendix back of the obstruction cause inflammatory activity with resulting thrombosis of the vessels and ultimate gangrene unless the plug slips back into the cæcum and drainage is reestablished.

Wilkie of Edinburgh has produced appendicitis in rabbits and cats by first stripping fluid fecal material from the cæcum into the appendix and then applying an obstructive ligature.

JOHN W. NIZUM M D

Fernstrom B. A Contribution to the Knowledge of Volvulus of the Sigmoid Flexure. Especially Its Chronic Form and an Account of the Technique Employed in Colonic Resection. *Acta chirurg Scand* 1926 lvi 213

The author reports twelve cases of volvulus of the sigmoid flexure, the majority of which were chronic. The difficulty of establishing the diagnosis in this condition and the importance of the roentgenological examination are emphasized. The method of colonic resection in the cases reported is described.

Clark J H. Cancer of the Sigmoid and Rectum in Children and Young Adults. *Ann Surg* 1926 lxxviii 833

Clark reports a case of carcinoma of the sigmoid in a boy 16 years of age. This is the thirteenth case on record of carcinoma of the sigmoid occurring at this age and brings the total number of recorded cases of cancer of the rectum and sigmoid occurring before the twentieth year of age to fifty two.

JOSEPH K. NARAT M D

Rosser C. Clinical Variations in Negro Proctology. The Venereal Factor. *J Am M Ass* 1926 lxxviii 934

This discussion is a continuation of a study of proctological peculiarities in the negro which was reported in the *Journal of the American Medical Association* 1925 lxxviii 93. Attention is called to the varied manifestations appearing in the anorectal region as the result of venereal infections. Rosser believes that primary rectal lues is uncommon in the negro but that secondary and tertiary proctological lesions in the form of mucous patches, flat condylo-

mata, vegetative condylomata, and tertiary rectal or anal ulceration occur much more frequently in the negro than the Caucasian

In the author's dispensary practice, gonorrhœal proctitis was usually seen late. This condition is rare in the male but common in the female. As a rule, stricture is present or impending. A frequent accompaniment of gonorrhœal rectitis is the moist venereal wart or acuminate condyloma. Anal chancreoid, which is also seen more frequently in the female than in the male, is described as an infection in both commures or of the entire anus.

Venereal lesions of the rectum in the negro are notably indolent and always progressive. They tend to invade the entire rectum (but not the sigmoid) and to cause stricture formation. Constitutional treatment without vigorous local treatment is ineffectual.

Forssner H. Rectal Angioma Perforating the Vagina. *Acta obst et gynec Scand* 19 6 v 433

The patient whose case is reported was a married woman 50 years of age whose menopause began one year ago. Her only complaint was a feeling of pressure in the lower part of the abdomen which she believed was due to a fibroid that had been found at examination a few years previously. Forssner's examination disclosed a small pedicled fibroid which did not account for the symptoms and slight bulging of the anterior vaginal wall. The position of the uterus was normal. The patient was advised to wait.

Nine months later she returned with aggravation of the symptoms and a history of a growing lump in the anterior wall of the vagina. There had been no discharge or bleeding. Examination revealed a rounded firm tumor about the size of a prune protruding from the vulva, and behind this an opening between the rectum and the vagina about 2 cm in diameter. No feces or gas was passed through this opening.

At operation, the tumor a pedicled growth from the rectal wall was removed. Histological examination showed it to be a benign angioma.

HARRY W. FINK, M.D.

Lockhart Mummery J. F. The Prognosis in Rectal Cancer. *Lancet* 19 6 cccv 1307

The prognosis as regards cure of a patient under 30 years of age suffering from cancer of the rectum is extremely poor. The author has no record of any patient treated for cancer of the rectum under the thirtieth year of age who has not died from prompt recurrence however drastic the operation. A patient with cancer of the rectum who is given only symptomatic treatment has a little less than two years to live. When the condition can be dealt with by perineal resection the mortality is not more than about 3 per cent. The chief cause of death used to be sepsis but this has been practically eliminated by careful technique. Today the chief causes of death are postoperative infarction and heart failure. In cases of growths at the rectosigmoidal juncture

which must be dealt with by abdominoperineal resection the operative mortality cannot be kept much below 25 per cent.

In ninety five cases of rectal cancer operated upon by the author, a five year cure was obtained in forty five. Lockhart Mummery has not seen any cures from deep X ray or radium therapy.

Colloidal copper delays the growth of the tumor and reduces the secondary ulceration. It seems to act by causing fibrosis in the growth. So far as the author is aware, it is associated with no danger.

In the use of colloidal lead there is considerable danger from the rapid reaction of the tumor and from acute plumbism due to the lead in the circulation.

JOSEPH A. NARAT, M.D.

## LIVER, GALL BLADDER, PANCREAS AND SPLEEN

Laird W. R., Brugh B. F., and Wilkerson W. V. Liver Function Studies and Their Clinical Correlations. *Ann Surg* 1926 lxxiv 703

The authors report upon tests of liver function in fifty two consecutive cases of gall bladder disease. The investigation included a carefully taken history, a thorough physical examination, Wassermann tests, studies of the blood chemistry and the phenoltetrachlorophthalein test, the icterus index test, the quantitative determination of the urobilin in the urine and Widal's haemoclastic crisis test. The studies of liver function were made at the time of the patient's admission to the hospital and as often as seemed indicated during the period of preparation for operation, at intervals during the postoperative course, and as a final check on the end results at some time subsequent to the patient's discharge from the hospital.

As the result of this study the authors were able to predict with considerable accuracy the amount of pathological change in the liver that would be found at operation. In only two of the fifty two cases was the prediction not confirmed at operation. There was a marked parallelism between the severity of the clinical symptoms and the degree of dysfunction as shown by the laboratory studies. In the authors' experience, the phenoltetrachlorophthalein test, the icterus index and the urobilin test have checked each other quite accurately. The Widal test has been found less reliable.

HARRY W. FINK, M.D.

Davis D. The Determination of the Icterus Index with Capillary Blood. *Am J M Sc* 1926 clxiv, 848

The author presents a new and very simple clinical method for the determination of the icterus index.

Glass tubing of 2 mm uniform bore and 10 cm length is prepared and both ends are drawn out to capillary size. The finger is punctured and a column of blood 2 cm long is drawn into the tube. The blood is allowed to clot, and the clear end of the tube is sealed in the edge of a flame. The tube

is then placed in a padded centrifuge tube and the clot thrown down. The layer of clear serum which forms above the clot is easily matched with standards contained in tubes of the same bore.

The method of preparing the standard solutions is described.

As venipuncture is obviated by this method it is convenient for frequent determinations of the icterus index and particularly suited to the study of the icterus index in infants and children.

SIGUEL KAHN, M.D.

Graham E. A. New Developments in Our Knowledge of the Gall Bladder. *Am J W Sc* 1926 clxxv 625

Graham believes that we are now perhaps just at the beginning of a rational conception of how inflammation of the gall bladder begins, how it produces its symptoms, and the nature of its effects. He has presented evidence which indicates that in the majority of cases cholecystitis is produced by the direct extension of inflammation from the liver to the wall of the gall bladder. This extension occurs through the abundant lymphatic anastomoses between the liver and the gall bladder. From experiments on the lymphatics of the gall bladder, duodenum and pancreas with the injection of dye, evidence seems to be accumulating that duodenal ulcer may induce cholecystitis directly by lymphatic extension without the intervention of a hepatitis.

From the standpoint of the diagnosis of gall bladder disease it seems that most tests of liver function have been rather disappointing. The only laboratory aid that offered hope was the roentgen ray, but it was necessary to discover a substance that would render the gall bladder opaque. After considerable preliminary work the author and his co-workers found the sodium salt of tetraiodophenolphthalein best suited for this purpose. They have used the intravenous mode of administration and since the purer products have been employed have had no reactions from its use. They prefer the intravenous to the oral method.

Failure to obtain a shadow is unexcelled in diagnostic value. Soft calculi which are otherwise invisible are frequently seen in the cholecystograms as negative shadows or filling defects. They occupy space in the gall bladder which would otherwise be filled by the opaque substance. Irregularities of contour denote adhesions, diverticula, etc. Variations from the normal in the density of the shadow and in the time of its appearance and disappearance are significant.

The author has used the method in 600 cases in 653 of which the dye was given intravenously. Of 109 cases in which the gall bladder was removed, the diagnosis was found to be correct in 92 per cent.

From a physiological standpoint the author has been interested in the manner in which the gall bladder empties itself. From a series of very remarkable experiments on animals he concludes that the chief factors in the emptying are purely passive

and the process is explained on the basis of simple mechanical principles as follows.

The gall bladder is a distensible viscus which responds to increased pressure in the common duct by becoming distended. When the ductal pressure is suddenly lowered by a sudden opening of the intestinal end of the duct there is an elastic recoil on the part of the wall of the gall bladder which results in the ejection of bile from the organ. Moreover, as the bile is streaming down the common duct past the orifice of the cystic duct there may be some siphonage action similar to that of the filter pump well known to chemists. However, the heisterian valves may interfere somewhat with the exit of bile in this way. The intermittent sudden opening and sudden closing of the duodenal end of the common duct results therefore in a gradual washing out of the gall bladder.

HARRY W. FINE, M.D.

Graham E. A. Functions and Diseases of the Gall Bladder. The Value of Cholecystography in Diagnosis. *Brit W J* 1926 ii 671.

Hurst A. F. The Diagnosis and Treatment of Cholecystitis. *Brit W J* 1926 ii 676.

In discussing the pathogenesis of cholecystitis GRAHAM points out the importance of gall bladder infection occurring by way of the lymphatics secondary to liver infection. Such an infection usually begins in the periphery of the organ. A lymphatic spread of infection may be carried also to the pancreas.

Graham describes the original experiments with tetraiodophenolphthalein and tetrabromophenolphthalein for the visualization of the gall bladder with the X-ray. Improvement in the manufacture of the iodine salt makes the latter preferable to the bromine salt. Its intravenous use is no longer accompanied by such undesirable reactions as those occurring at first. The isomeric salt phenoltetraiodophthalein seems to pass through the liver more rapidly and promises to be the chemical of ultimate choice.

A careful study of a group of 300 cases demonstrated that there were more reactions following the oral administration of the iodine salt than following its intravenous use. There were fewer reactions following the use of phenoltetraiodophthalein than in any other method.

Studies in the mechanics of gall bladder contraction have disproved the contrary innervation theory of Meltzer. Contractions of the gall bladder if they occur at all are exceedingly slight and of no consequence. The gall bladder cannot be made to contract by any means and experiment has shown that in the case of the dog the gall bladder shadow will persist for several days if injections with tetraiodophenolphthalein are made at intervals.

The gall bladder may be emptied by abdominal pressure, gradual washing out by fresh bile from the liver, the elastic recoil from overdistention or the absorption of its contents. The flow of bile following the injection of pituitrin or magnesium sulphate

seems to depend upon the induction of active duodenal peristalsis

HURST states that many cases of chronic cholecystitis remain undiagnosed because the symptoms do not correspond to the typical clinical impression of the disease. A carefully taken history and the finding of tenderness on pressure over the visualized gall bladder during a period of discomfort should make clear the presence of even a slight non surgical cholecystitis

The author does not agree with Craham that the gall bladder does not contract. As disproving Graham's theory he cites the occurrence of biliary colic when a calculus becomes impacted in the mouth of the cystic duct

In the diagnosis of cholecystitis the Lyon method and a study of gastric secretion are of value since hypochlorhydria is often present

In the treatment, Hurst employs urotropin in large doses with such alkalies as sodium benzoate and potassium citrate three times a day. A small dose of magnesium sulphate is given each morning to promote biliary drainage. Vaccines made from organisms in the bile are prepared. Achlorhydria is treated by the administration of hydrochloric acid in suitable doses. WILLIAM J. PICKETT M.D.

#### Copher, G. H. and Kodama S. The Regulation of the Flow of Bile and Pancreatic Juice into the Duodenum. *Arch Int Med* 19 6 xxviii 647

Tonus and peristalsis in the duodenum are of great importance in the regulation of the flow of bile into the duodenum. This control is independent of factors other than pressure of the bile in the common duct. A fall of pressure in the pancreatic duct accompanies a relaxation of tonus. The duodenal wall exerts a like control over the discharge of pancreatic juice from the pancreatic duct. A relaxation period between peristaltic movements during which time bile and pancreatic juice enter the duodenum, allows the chyme and secretions to be mixed together by rhythmic contractions. A peristaltic movement following the relaxation period sweeps this bolus of chyme and secretions down the intestine. The process is then repeated. Food drugs and chemicals that affect tonus and peristalsis are factors in the regulation of the flow of bile and pancreatic juice into the duodenum.

The injection of 1 or 2 c cm. of oleic acid into the duodenal segment causes a marked increase in the duodenal movements and a fall in the common duct pressure. The relaxation of the tonus of the duodenum was found to be greatest approximately five minutes after the introduction of the fatty acid. Oleic acid produces a greater fall of pressure in the common duct than magnesium sulphate. The intravenous injection of moderate doses of atropine sulphate permits a considerable reduction of pressure in the common duct. Epinephrin chloride also causes a relaxation of the intestine and a fall in the common duct pressure. The fall is most marked during the

rise of blood pressure from epinephrin. The intravenous injection of pituitary extract is followed by an initial immediate relaxation of the duodenum and a marked fall in its common duct pressure corresponding to the rise of blood pressure.

Pilocarpine and physostigmine increase the tonus of the intestine and thereby increase the amount of pressure that the duct will withstand. The increase of tonus is usually so great that in spite of increased movements of the duodenum there is no discharge from the common duct.

It is evident that drugs that affect the tonus of the duodenal musculature affect the discharge of bile from the common duct. MORRIS H. KAHN M.D.

#### Wangenstein O. H. On the Significance of the Escape of Sterile Bile into the Peritoneal Cavity. *Ann Surg* 19 6 lxxiv 691

According to Wangenstein the leakage of sterile bile into the peritoneal cavity is not innocuous. When well functioning biliary fistulae from which bile escapes into the peritoneal cavity are established the experimental animal soon dies of cholemia due to the toxic action of the bile salts.

In man the escape of any considerable amount of sterile bile into the peritoneal cavity following subcutaneous rupture of the normal bile passages is always fatal unless the bile is removed. The cause of death is cholemia. The loss of bile from the intestinal tract is a contributing factor.

The quicker death of the dog after extravasation of bile as compared with the death of man under the same conditions is explained partially by the fact that dog bile is largely toxic taurocholic acid whereas human bile contains relatively more of the less toxic glycocholic acid. HARRY W. FINK, M.D.

#### Heyd G. G. Stricture of the Right Hepatic Duct Following Cholecystectomy. *Ann Surg* 1926, lxxvii 69

The author reports the case of a 44 year old woman who complained of persistent jaundice, sharp colicky pain in the right upper quadrant of the abdomen, nausea, vomiting, and tenderness in the area of a cholecystectomy incision which had been made a year previously. During a period of four months after the cholecystectomy the patient had had biliary discharge and lost 50 lbs.

Heyd made a clinical diagnosis of chronic obstructive jaundice due to extraductal pressure or possibly an injury to the external biliary ducts. The icterus index was 9.3 and the finding of the quantitative van den Bergh test, 0.62 mgm. per 100 c cm. The Touchet test was positive. The carbon dioxide combining power was 41.9. The bleeding and clotting times were four minutes. The red cell count was 3,740,000.

When the abdomen was opened through a right rectus incision the liver showed a moderate degree of fibrosis. The hepatic flexure and duodenum had become firmly united to the undersurface of the liver as the result of a proliferating chronic peritonitis.



The stomach was hypervascularized and adherent to the undersurface of the previous abdominal incision. At the midpoint of the pyloric ring there was a perforating ulcer with a defect 3 cm in diameter. This had been occluded by apposition to the under surface of the liver. At the normal site of the cystic duct there was a thick, hard indurated mass traversed by the remnant of the right hepatic duct. Apparently the right hepatic duct was the site of an occlusive inflammation.

The pylorus and duodenum were freed and brought up into the wound. A Horsley pyloroplasty operation with excision of the ulcer margin was performed. The hepatic flexure was separated from the under surface of the liver and the common duct identified by means of a hypodermic syringe and the aspiration of bile. After identification of the inferior portion of the common duct a clean knife dissection was carried out exposing the common duct *in toto*. At the site of the cystic duct the common duct passed into a hard ridge of inflammatory tissue. Just below this ridge the common duct was opened and attempts were made to probe from below upward. These were unavailing. The right hepatic duct was identified above the scar by the aspiration of bile.

A longitudinal incision was made through the scar tissue and carried down to the common duct. The hepatic duct was dilated and a No. 10 French rubber catheter inserted therein. The catheter was carried well down into the common duct. The gap between the right hepatic and the common duct was then sutured in a transverse fashion. The incision connecting the two ducts having been made in a longitudinal direction. The result was the formation of an ample lumen between the hepatic duct and the main channel of the common duct. A cigarette drain was inserted in Morrison's space and two sheets of rubber tissue were placed between the liver and the duodenum. Recovery was uneventful except for a slight alkalosis which developed on the third day. Since the operation the patient has gained 30 lbs.

HARRY W. FINK, M.D.

Judd E. S. and Parker B. R. The Mortality Following 1324 Operations on the Biliary System and Pancreas at the Mayo Clinic in 1925. *Surg. Clin. N. Am.* 1926, 11, 1-97.

The authors report a decrease in the death rate from operations on the biliary passages, liver and pancreas from 4.14 per cent in 1923 to 2.94 per cent in 1925. They divide the operations into eight groups: (1) operations for acute cholecystitis; (2) operations for chronic cholecystitis; (3) operations for chronic cholecystitis and concurrent conditions; (4) operations on the gall bladder and ducts; (5) operations for benign lesions in the biliary system; (6) operations for carcinoma of the gall bladder; (7) operations on the pancreas; and (8) operation on the liver.

Factors influencing the mortality were: (1) the pre-operative study and preparation of patients who were considered poor surgical risks, especially jaundiced patients who were given treatment to

decrease the clotting time of the blood; (2) close cooperation between the medical and surgical services; (3) postponement of operation in the cases of obese persons until the obesity had been sufficiently reduced; and (4) the minimal use of drains except when there was localized infection or the common duct was opened.

In fifty-four cases in which operation was performed for acute cholecystitis there were three deaths. The patients who died were obese. Two died from severe myocardial degeneration and one from pulmonary embolism on the tenth day.

Of 908 cases of chronic cholecystitis with or without stones, cholecystectomy was performed in 878 with thirteen deaths. Cholecystostomy was performed in twenty cases with one death. In this group six deaths were due to cardiac disease, one resulted from pneumonia, four were due to pulmonary embolism, two to pneumonia, and one to massive collapse of the lungs.

There were 114 operations for chronic cholecystitis and concurrent conditions with one death. The patient who died had had a cholecystostomy in 1916 and came to the Clinic with a history of severe myocardial damage and recurrent attacks of colic and a biliary fistula. Death was due to peritonitis, syphilis and hypertrophy of the heart (516 gm.).

One hundred forty-two operations were performed on the bile ducts for stones with nine deaths and thirty-seven operations on the bile ducts for benign lesions in the biliary system with two deaths. Two of the patients died from pulmonary embolism, three from peritonitis, two from pneumonia, one from cardiac disease, one from acute suppurative pancreatitis, one from internal hemorrhagic pachymeningitis and one from hepatic insufficiency. Sixty-eight were jaundiced at the time of operation.

There were nine operations for carcinoma of the gall bladder or ducts with four deaths.

Twenty-nine operations were performed on the pancreas with four deaths. Twenty-one were cases of malignant disease, six were cases of cysts, and two were cases of hemorrhagic pancreatitis. The four deaths occurred in the malignant group: one from generalized carcinomatosis with hepatic insufficiency, one from gastrointestinal hemorrhage, one from hepatic insufficiency and from uræmia.

Thirty-two operations were performed on the liver with two deaths. One death occurred twelve days after operation from gastrointestinal hemorrhage in a case of primary carcinoma of the liver. The other occurred in a case of extreme atrophic cirrhosis in which a Talma-Morrison operation had been performed.

#### MISCELLANEOUS

Eusterman G. B. Unfamiliar Aspects of Hæmatemesis and Melæna. *Med. Clin. N. Am.* 1926, 1, 483.

In Eusterman's experience extragastric lesions in the ambulatory patient are as often responsible for

gross hæmorrhage from the upper digestive tract, single or repeated, as are chronic ulcers of the stomach or duodenum and gastric cancer. The occurrence of hæmatemesis or melena may indicate an acute or chronic gastric or duodenal lesion but in the absence of characteristic symptoms and signs other causative factors must be excluded. These are hepatic cirrhosis, cholecystic disease with or without associated changes in the liver, foci of infection giving rise to acute focal hæmorrhagic gastritis or duodenitis, disease associated with splenomegaly, such as splenic anæmia, Banti's disease, leukæmia, hemolytic jaundice, appendiceal disease with reflex gastric disturbances hæmophilia, purpura, chronic nephritis, and uræmia.

There are instances of symptomless isolated hæmorrhage the cause of which is never ascertained, the patient remaining in good health. In a small percentage of cases of chronic gastric or duodenal ulcer, hæmorrhage single or repeated may be the only symptom. Only about 30 per cent of chronic benign lesions give rise to gross bleeding, and in the majority of the malignant lesions the bleeding is occult, gross hæmorrhage being manifested in only 8 per cent, usually during the late stages of the disease. Unusually severe physical exertion or an alcoholic debauch may provoke hæmorrhage in those predisposed to it even after years of freedom from gastric symptoms or hæmorrhage.

The author describes four types of cases in which anæmia and bleeding from the upper digestive tract were outstanding features. In this group they were associated with cholecystic disease with regional hepatitis and appendicitis, hepatic cirrhosis and splenomegaly with probably an associated duodenal ulcer, hæmorrhagic focal duodenitis, and gastric carcinoma developing soon after gastro enterostomy for duodenal ulcer.

**Monson, R. B. P.** An Investigation in the Wallaby of the Muscle Trauma Caused by the Common Incisions Used in Laparotomy. *Med J Australia* 1926 11 785.

Monson has attempted by experimental work on the wallaby to place the various incisions for opening the abdomen on a definite pathological basis.

The wallaby was employed because it usually maintains the upright position with a similar stress upon the abdominal muscles to that occurring in man.

Two animals were used one to test the supra umbilical incisions with the rectus retracted medially and laterally and the other to test the subumbilical mid rectus and the gridiron incisions. The peritoneum in each case was closed with plain catgut, the muscle fascia, and skin were closed with chromicized catgut No. 1. Healing was uncomplicated. Two months later both animals were killed and sections were taken from the region under each incision and subjected to careful pathological examination.

Contrary to the usual teaching, the minimal amount of damage was done by the incision in which,

after opening of the sheath, the rectus was retracted medially. The next best incision as judged by the lack of damage to muscle fibers was the mid rectal in which the muscle was split.

The gridiron incision proved to cause the greatest degeneration in all areas examined. This corresponds to the author's experience, he having seen more ventral herniæ in this incision than in any other save the mid line section.

The approach through the rectal sheath with lateral retraction of the rectus has been called the perfect anatomical incision and sponsored by such men as Moynihan and Sherren. However, this investigation showed that while there was little interference in the lateral half of the muscle, the change in the medial half was uniformly great, while the sections below the incision revealed degeneration of muscle fibers equalled only by the corresponding sections in the gridiron incision.

On the basis of his findings, Monson suggests that if this incision be used, the peritoneum be opened under the lateral half of the muscle to prevent subsequent ventral hernia. **GEORGE A. COLLETT, M.D.**

**Pancoast, H. K. and Boles, R. S.** Non Traumatic Left Diaphragmatic Hernia. *Clinical and Roentgenological Studies in Fifteen Cases*. *Arch Int Med* 1926 LXXVI 633.

According to the various reports in the literature, diaphragmatic hernia was discovered only seven times in 25,000 roentgenological examinations. In the authors' opinion, however, the condition is not rare but has been frequently overlooked. On the basis of their origin Richards has classified these herniæ as follows:

1. True herniæ (those with a hernial sac) (a) congenital (present at birth), (b) acquired (through a natural opening usually the œsophagus), (c) those not occurring through a natural opening, traumatic or non traumatic.

2. False herniæ (without a sac, 90 per cent of cases) (a) congenital, (b) acquired (all traumatic).

3. Exentration of the diaphragm (not true hernia).  
Diaphragmatic hernia is a protrusion of any of the abdominal viscera into the thoracic cavity through a congenital or an acquired opening in the diaphragm. The opening may be a normal one which has become enlarged, an artificial one formed by injury, or present abnormally as the result of impaired development. When the hernia has a sac it is a 'true hernia,' and when it lacks a sac it is a 'false hernia.' The sac consists of a layer of pleura or peritoneum or both. Both the true and the false type of hernia may be congenital or acquired. By far the most common type is the congenital false variety which constitutes 90 per cent of diaphragmatic herniæ of the congenital type. The acquired false herniæ are all traumatic.

Lewald believes that whenever an abdominal viscus is found in the thoracic cavity the condition should be regarded as congenital unless there is overwhelming evidence that it has been acquired. False

hernia are believed to develop as the result of a defect in the diaphragm due to imperfect closure of the pleuroperitoneal membrane during fetal life. In cases of the true hernia the arrest in the development of the diaphragm occurs at a later period when the muscle is still too weak to offer any resistance but after the formation of the pleura and peritoneum. The latter are consequently involved in the resulting protrusion into the thorax and make up the sac which establishes the true type of hernia.

Lewald calls attention to a congenital anomaly that he terms thoracic stomach. This is a stomach that develops above the diaphragm and is never found below it. In such cases the X-ray shows that the oesophagus does not pass through the diaphragm and no other organs of the abdomen are ever found in the thorax.

Any part of the diaphragm is susceptible to herniation especially any of the natural openings. A true hernia through the aortic opening or the quadrilateral foramen which serves as the opening for the inferior vena cava has never been seen. The great majority of hernia occur through openings on the left side of the diaphragm (the ratio to those occurring on the right side being 12:1). They may be anterior, central or posterior. The oesophageal variety is the most common. Hernia occur more frequently on the left side of the diaphragm because the right side is protected by the liver below and the right lung above.

Symptoms may be entirely absent. Probably the most constant symptom is pain which is often of a

colicky nature localized just above the ensiform or in the epigastrium, and comes on gradually and especially when the patient is lying down and at night. The pain may be so severe as to suggest biliary colic and is apt to radiate through to the back and around to the shoulders. Tenderness is noted in the right upper quadrant or less frequently in the epigastrium. Regurgitation is frequent especially when the patient is in the supine position. Excessive flatulence and belching often occur two or three hours after meals. Hematemesis may result from inflammation of the part of the stomach wall that is involved in the opening. Dyspnea and palpitation occur in elderly persons and especially those with associated myocardial disease, cardiac hypertrophy and aortitis.

Physical signs may be absent. Asymmetry of the chest may be observed.

The diagnosis is made by the roentgenologist. Observations should always be made in the horizontal position. It appears that these hernia are frequently overlooked because the fundus is not filled and the patient's position is not changed. The length of the oesophagus may be determined by oesophagography.

The danger of strangulation even if not great is always present. This complication greatly increases the mortality of operation.

The only treatment for diaphragmatic hernia is surgical. Most surgeons prefer laparotomy despite the fact that the dangers of thoracotomy have been reduced to the minimum. MORRIS H. KAHN, M.D.

# GYNECOLOGY

## UTERUS

**Westermarck H** Exploration of an Interpositioned Uterus *Acta obst et gynec Scand* 19 6 v 435

Westermarck had occasion to explore the interior of the uterus of a 58 year old woman who, five years previously, had had an interposition operation for prolapse and complained of a persistent discharge with occasional bleeding. There was no change in the appearance of the cervix. Exploration was done because of the suspicion of cancer. On account of the extreme ante flexion of the body of the uterus it was impossible to enter it through the cervical canal. Therefore the fundus was approached through the anterior vaginal wall. The uterus was laid open and the interior explored with the finger. In the mucous membrane of the fundus a small fibroid about the size of a bean was found. This was enucleated. Recovery followed. **HARRY W FINK, M D**

**Lynch, F W** The Problem of Prolapse in Young Women with Cystocele and Rectocele *Californians & West Med* 1920 xxv 477

Prolapse and hernia of the rectal and bladder walls necessitate extensive mutilating operations unless they are corrected in their early stages. Cervical eversions should be cleared up with the cautery and displacements of the uterus corrected.

By careful postnatal care many patients can be saved from late extensive operations.

While it is advisable to restrict the number of repair operations on women in the child bearing period, a good repair should withstand the strain of subsequent labor. The author has even done a secondary repair immediately after labor when the condition of the patient has been good.

In prolapse the correction of the rectocele and cystocele should be followed by a well selected round ligament suspension operation. The various types are described. **I EDWARD BISHKOP, M D**

**Borjeson, C** A Contribution on the Late Results of the Neugebauer LeFort Operation for Prolapse (Beitrag zur Kenntnis der Spaetergebnisse der Neugebauer LeFort schen Prolapsoperation) *Acta obst et gynec Scand*, 1926, v 235

Following a review of the development and results of operations for prolapse by the Neugebauer LeFort method, the author reports thirty one cases from the Women's Clinic of Lund. The operative technique is described. Except for one death from pulmonary embolism and one recurrence, the results were good.

The indications for operation are discussed and the method is compared with other operations for prolapse. The Neugebauer LeFort procedure is especially adapted to the treatment of elderly women.

**Cronberg N E** On Local Anaesthesia for Prolapsus Operations *Acta obst et gynec Scand*, 1926 v 201

Cronberg describes the technique employed for many years at the Women's Clinic in Lund in the induction of regional anaesthesia for operations for prolapse and gives a summary of the results in about 100 cases.

The method has distinct advantages as it is simple, gives a satisfactory anaesthesia for a sufficient length of time, does not lead to any complications, and can be used for patients of any age.

**Spalding A B** Haemostasis in Vaginal Hysterectomy for Procidencia *Am J Obst & Gynec*, 1926 xii, 655

Of a series of 603 patients with various types of pelvic prolapse, ninety were treated by complete vaginal hysterectomy. Experiences with this operation have demonstrated the need for wide dissection of the pelvic fascia to close the hernial opening and decrease the danger of recurrence. As the pelvic fascia is developed around the ureters, the nerves, and especially the pelvic vessels, a special technique is necessary to guard against postoperative haemorrhage.

The particular point in the technique described by the author is the separate ligation and section of the vesico uterine ligaments.

Bovee secures haemostasis by making a T shaped incision in front of the cervix in the anterior vaginal wall and not separating back far enough on either side to involve the uterovesical ligaments, but carrying the incision as near the pubic region as necessary. He then applies a broad clamp to include the fallopian tube, the ovarian ligament the entire broad ligament, and the uterosacral and uterovesical ligaments.

The two sides are then brought together by a sewing machine lock stitch so that every part of one side is approximated to the other side. Both lateral stumps are included in the body of this suture material. The upper part of the suture line is then brought forward and sutured at the juncture of the urethra with the bladder. On either side in this broad ligament shelf that has been constructed two sutures are placed to secure it anteriorly.

In the discussion of this report, FRANK said that he does not do a vaginal hysterectomy for prolapse because preservation of the uterus facilitates the work of the surgeon in the event a recurrence develops.

In 180 cases of repair done in the period from 1925 to date there were fifty six cases of prolapse in which forty two ventral fixations and five Alexander operations were performed. The fact that a recur

rence of the rectocele or the cystocele follows every procedure in a certain number of cases shows that no technique is as yet perfect

WARD stated that he puts a ligature at the base of the uteropubic fascial ligaments to control the bleeding. The Spalding operation forms a proper pelvic floor and takes care of the rectum by lifting it up

RAWL reported that his method of dealing with prolapse consists in an anatomical repair in women in the child bearing period, a vaginal hysterectomy and anatomical repair in women in the early menopause and a Watkins interposition in elderly women or those not physically suited to extensive dissection

E L CORNELL MD

Miller C J Chronic Endocervicitis *J Am M Ass* 1926 lxxvii 1695

Matthews H B The Electric Cautery Versus the Sturmdorf Operation *J Am M Ass* 1926 lxxvii 1802

Culbertson C Erosion of the Cervix Uteri *J Im M Ass* 1926 lxxvii 1808

Gellhorn G Syphilis of the Cervix *J Im M Ass* 1926 lxxvii 1812

Corbus B C and O'Connor V J Diathermy in the Treatment of Gonorrhœal Endocervicitis *J Am M Ass* 1926 lxxvii 1816

MILLER states that successful treatment of chronic endocervicitis must be based on the structure function and pathological changes of the cervix. Because of its complicated structure and frequent exposure to trauma and external infection the cervix is a favorable medium for the growth of bacteria. Its lymphatic system furnishes an ideal route for the upward extension of local infection.

Specific infection laceration of the external os from childbirth and prolonged constipation are etiological factors in endocervicitis. The predisposing causes are anemia tuberculosis or any condition lowering the patient's resistance. The bacterium most commonly associated with endocervicitis is the gonococcus. This is sometimes difficult to isolate because of its tendency to burrow deep into the cervical tissues and remain inactive for years. Next in order of frequency are the streptococcus staphylococcus and colon bacillus.

The cervical mucosa appears red swollen and everted. The so called erosion is not an ulceration but merely new cell formation. The symptoms are a leucorrhœal discharge and menstrual derangements and frequently sterility. As the leucorrhœal discharge and gross cervical picture are pathognomonic the diagnosis is usually not difficult. Tuberculosis and syphilis of the cervix may be excluded by the history and the general physical and laboratory examinations. The cervix is a frequent focus of systemic infection.

MATTHEWS reviews the various types of cautery operations including those consisting of a few linear cervical incisions for superficial and moderately extensive infections, crucial cervical incisions and

the coning out process for deep infections. The Sturmdorf enucleation is described in detail.

Cruterization is primarily a prophylactic measure most successful in superficial cervical infection and the destruction of infected cervical mucosa after the menopause or preceding supracerivical hysterectomy when further menstruation is impossible. The Sturmdorf method is best suited for cases with deeply disseminated infection of long standing with cystic changes occurring during menstrual life in which extensive cauterization would interfere with subsequent labor.

CULBERTSON describes the various types of cervical erosions and their relation to benign and malignant disease. Erosions are the direct result of excessive discharge although a leucorrhœa may be present without the formation of an erosion as is common in the virgin with a retroverted uterus and in the occasional case of profuse discharge in pregnancy. Curtis has stated that when the cervical discharge becomes alkaline or strongly acid an irritating factor is to be assumed. The cylindrical epithelial cells proliferate in this medium resulting in the development of the simple erosion followed by the papillary formation. Thus the sequence is infection inflammation leucorrhœa papillary and follicular erosion and atypical cell formation.

GELLHORN holds that syphilis of the cervix occurs more frequently than is generally assumed and may be manifested in any of the three stages of the disease. The primary lesion may rapidly heal or become a typical erosion. During this stage there are no symptoms and the condition may be readily overlooked. The histological picture is that of an inflammatory process but the spirochæta pallida is found. In the secondary stage syphilis manifests itself on the cervix in the form of macules papules and ulcers and the Wassermann reaction is strongly positive. Secondary ulcers are characteristic presenting a whitish yellow discoloration and red or pink areas. Bleeding may occur in these ulcerations. Tertiary lesions appear as gummata or gummatous ulcers giving rise to bleeding and a discharge which make it difficult to differentiate the lesion from carcinoma. Microscopic examinations are sometimes useless if the lesion is in a necrotic stage. In such cases anti syphilis treatment should be given for differentiation.

The cervical secretions contain spirochætes in the presence of a local and hidden lesion. Dystocia during delivery is often caused by syphilitic lesions of the cervix. Syphilitic lesions of the cervix predispose to cancer. Erosion soft chancre tuberculous ulcer gonorrhœa and carcinoma must be differentiated.

CORBUS and O'CONNOR state that successful diathermy for gonorrhœal endocervicitis depends on destruction of the deep organisms without injury to the endocervical canal. Local applications of bactericides and caustic protein coagulants are useless while douches tampons and vaccines are only adjuncts in the treatment. Diathermy has the effect

of regulated, deep, localized heat on metabolism and the specific action of heat on the gonococcus

Endocervical diathermy is contra indicated in pregnancy and acute stages of infection Successful results depend upon the use of a high frequency machine and a proper technique and time of application of the heat radiation The authors describe in detail their method of conveying the radiation to the parts invaded MAGNUS P URNES M D

**Polak J O** How Pathology of Fibroid Tumors of the Uterus Will Determine the Selection of Radium or Operation in Their Treatment  
*Am J Obst & Gynec* 1926 xli 781

Many fibroids need no treatment as they cause no symptoms and do not grow for long periods of time, but all women with fibroid tumors should be under observation reporting for examination at definite intervals Fibroids demand treatment for (1) the control of hæmorrhage (2) the relief of pressure and (3) rapid or progressive growth torsion, or degenerative changes Bleeding may always be controlled by rest packing and X ray or radium irradiation Drugs have little effect The curette, aside from its diagnostic value has no place in the treatment of hæmorrhage caused by a fibroid Radium may be used for the control of hæmorrhage in tumors within the confines of the uterus if the tumor is not larger than a three months pregnancy and is without adnexal growth or parametrial or peritoneal lesions

Before any woman is subjected to X ray or radium therapy, she should be examined under anaesthesia to determine the exact relation and location of the tumor mass or masses, and a diagnostic curettage should be made to exclude malignancy All scrapings should be submitted to a pathologist

The following types of tumors require operation (1) tumors larger than a three months pregnancy (2) tumors with a rapid growth suggesting progressive changes (3) tumors producing pressure symptoms, (4) tumors associated with pelvic pain (5) pedunculated tumors in which radium only increases the necrosis (6) tumors with pathological changes in the adnexa, (7) tumors with associated secondary anemia (cachectic appearance) in which the uterine hæmorrhage has not been sufficient to account for the degree of anemia (8) tumors in young women, (9) multiple submucous tumors distorting the uterine cavity (radium in these cases is likely to produce pyometra) (10) tumors which cannot be definitely differentiated (11) tumors in women who fear radium

In such cases myomectomy or hysterectomy should be done E L CORNELL M D

**Masson J C** Myomectomy Hysterectomy and Radiotherapy in Fibromyoma of the Uterus  
*J Am M Soc* 1926 lxxvii 1530

In the treatment of uterine fibromyomata the size of the tumors, the symptoms and the patient's general condition and age must be taken into consideration During the child bearing period the

ideal operation is myomectomy There is no contra indication to opening the lumen of the uterus If the patient is more than 40 years of age, total abdominal hysterectomy or radium irradiation is often advisable the choice of procedure depending upon the size and situation of the tumor or tumors, the symptoms, the presence of adnexal disease or other indications for opening the abdomen, and the surgical risk Total or subtotal abdominal hysterectomy is indicated when there are complications and when the tumors are large Occasionally vaginal myomectomy or vaginal hysterectomy is advisable

**Essen Moller E** A Short Account of the Prognosis and Treatment of the Vesicular Mole  
*Acta obst et gynec Scand* 1926 v 412

Of fifty vesicular moles seen in one clinic eight (16 per cent) were chorionepitheliomata or destructive moles Twenty two (44 per cent) of the women had reached the age of 40 years and eighteen (36 per cent) had reached the age of 45 years Five of the eight women with malignant vesicular moles were over 45 years of age

The author suggests amputation of the uterus in women over 45 years of age to prevent malignant degeneration in vesicular moles

ROLAND S CROW M D

**Cordus R** The Morphology of Cervical Carcinomata of the Uterus as a Basis for the Judgment of the Sensibility to Rays  
*Brit J Radiol* 19 6 xxxi 477

Cancer cells differ in their reaction to the X rays The basal cell epithelioma is the most sensitive, while carcinoma of the intestinal tract reacts poorly Forty cases of cancer studied by the authors showed quite conclusively that the prognosis offered by irradiation is more favorable in the more differentiated forms of carcinoma than in the less differentiated forms

PALL W SWEET M D

**Farrar L K P** The Reaction of the Tissues to Radium in the Treatment of Cancer of the Cervix and the Importance of Lacerations in Producing Cancer in This Location  
*Surg Gynec & Obst* 19 6 clii 719

In the Woman's Hospital of New York all ward patients treated for carcinoma of the cervix of the uterus are urged to return once a month for five years for observation Feret the medical artist made a series of water color paintings to show the various stages of reaction following radium treatment of the cervix Five stages are recognized

The stage of hyperæmia shows a cervix intensely red This stage is reached usually about one week after the irradiation

The stage of slough is characterized by a green foul slough resulting from disintegrating carcinoma This stage is usually present one month after treatment

The stage of healing is ordinarily in evidence two months after the treatment The cervix has a clear, smooth dusky red surface

The stage of contraction is reached from three to four months after the irradiation and shows connective tissue contraction and distortion of the cervix.

The stage of marked contraction is found some time later when the stage of quiescence and final contraction has been reached. The cervix is often unrecognizable. At this time stock is taken of the results of the radium treatment of the lesion.

The author urges the eradication of cervical defects due to trauma or infection. Less than 5 per cent of carcinomata of the cervix occur in nulliparous women. The Emmet trachelorrhaphy is urged for the repair of cervical lacerations.

A JAMES LARKIN M D

**Bonney V. The Outcome of 214 Radical Abdominal Operations for Carcinoma of the Cervix Performed Five or More Years Ago.** *Proc Roy Soc Med Lond* 1926 xx 120

The author performed Wertheim's operation for carcinoma of the cervix in 14 of 340 unselected cases. In nearly every instance he removed the glands and cellular tissue occupying the obturator fossae as well as the glands lying along the iliac veins and all or practically all of the vaginal canal.

The only bars to the accomplishment of the operation that he has recognized are extensive involvement of the bladder or intestine or involvement of the ureters causing bilateral hydro ureter.

Thirty four of the 214 patients died from the operation, eighty two died from recurrence, five died from other disease, eight were lost sight of and eighty five were free from recurrence after five years.

JOSEPH K. NARAT M D

#### ADNEXAL AND PERIUTERINE CONDITIONS

**Werner P. Further Observations on Roentgen Children.** (Weitere Beobachtungen an Roentgenkindern.) *Arch f Gynaek* 1926 cxxix 157

This is a report concerning twenty two children born of women who had undergone irradiation of the ovaries before becoming pregnant. The distinct under development of these children, the fact that a large percentage of them died in the first years of life, their marked susceptibility to disease and the relatively large number of malformations they presented demonstrate that irradiation of the ovaries may be very dangerous for children born subsequently and that the irradiation of women in the child bearing age must be done with the greatest conservatism. The already generally well known possibility of injury to the fetus in irradiation during pregnancy is shown by the report of a case of mongolism with microcephalus.

WERNER (G)

**Von Mikulicz Radecki F. Experimental Investigations on Tubal Movements.** (Experimentelle Untersuchungen ueber Tubenbewegungen.) *Arch f Gynaek* 1926 cxxviii 318

In the investigation of the migration of the ovum the cilia theory has given place to the theory of

tubal peristalsis. The theory of tubal peristalsis dates back to 1800 when such muscle contractions were observed in the human being and in animals by several investigators. Studies of the contractions of the tubes of animals have been made by Kehrer and American investigators on living specimens. The author has studied both the nature of the contractions and the fluctuations which occur during pregnancy and pathological conditions. As he was unable to obtain any findings of value from roentgenographic studies of tubal motion in rabbits, he studied living human tubes by Kehrer's methods.

**Longitudinal muscle.** At the beginning of the study the normal human tube contracted in a rhythm of 10-45 seconds independent of the menstrual cycle, the stage of gestation or puberty, but in the further course of the study there was a change in the type and rhythm of the contractions in the different menstrual periods and of course individual variations. Semile tubes and those of women with intra uterine pregnancy showed regularity of contraction and rhythm but soon became fatigued. Inflamed tubes and those with a tubal pregnancy showed a quite different behavior of the spontaneous movements. The behavior was different also in tubes with extension of inflammation to the musculature.

**Circular muscle.** The most distinct movement was noted in the ampullar portion of the tube because of its relatively large lumen. The rate in all cases averaged 10-30 seconds. Pathologically changed tubes showed only very slight or no contractions. The most marked contractions occurred in the tubes of menstruating women and those with an undisturbed tubal pregnancy.

It is possible that the longitudinal and circular musculature contract spontaneously but observation of peristalsis is impossible on account of the serosal covering.

The author's investigations on the tubes of rabbits *in situ* consisted in visual observations controlled by records of Garten's photokymograph. In all of seventeen instances in which the tubes were exposed in studies made on twelve rabbits under urethane anesthesia, more or less intense contractions were observed. The contractions always began at definite points. The rhythm of the contractions averaged 5-30 seconds. The rhythm was slower during pregnancy. The direction of the contractions could not be determined readily. About three or four tubal contractions were noted to one uterine contraction. It appeared that a tubal contraction always preceded a uterine contraction, an observation which may indicate that the tubal contraction is carried over into the uterus. However the uterus has an automatism of its own.

With regard to the importance of the tubal contractions, the author agrees with Fraenkel that the contractions of the circular muscles form as it were fixed points for the longitudinal muscles to grasp and thereby move the tubal contents. If as has not yet been established, the spontaneous contractions in the human tube correspond to the move

ments of the rabbit's tube, it is evident that the human tube has at all times the ability to transport the ovum toward the uterus without any stimulus from the ovum  
CORDUA (G)

**Randall, L. M. Some Aspects of Tubal Inflation**  
*Med Clin N Am* 196 x 69

Tubal inflation is a useful diagnostic measure. Its therapeutic value is slight. Since endometrium may be transplanted to the peritoneal cavity during the test, the procedure is best carried out midway between menstrual periods.

The rate of gas flow must be slow enough to reduce spasm of the uterine muscle to the minimum. This spasm has a direct bearing on the result of the inflation. It can be obviated by very gradually increasing the intra uterine pressure and by preceding the test by the use of belladonna.

Roentgenograms following inflation give little additional information. In Randall's experience, 200 c cm of carbon dioxide injected through patent tubes into the peritoneal cavity always produces the characteristic shoulder pain. Roentgenograms made following the injection of Ipiodol into the cavity of the uterus and tubes are a valuable aid in the diagnosis of sterility in women.

**Unterberger F. Normal Delivery After Implantation of the Tubes (Normaler Partus nach Tubenimplantation)** *Monatsschr f Geburtsh u Gynaek* 1926 lxxii 1

The author describes the technique of tube implantation which he has performed in four cases. Primary healing occurred in all. One of the author's patients, a young woman 25 years old who had been sterile throughout the eleven years since her marriage, became pregnant soon after the operation. Operation revealed a bilateral salpingitis isthmica nodosa but the ostia of the tubes were open. The right tube was implanted. The course of the pregnancy was normal. Toward the end of labor forceps were used because the fetal heart tones were becoming weaker. The child was in excellent condition and weighed 7½ lbs. The puerperium was normal.

This case proves that the small scar at the fundus is well able to withstand the increased intra uterine pressure of the gravid uterus and in no way influences the labor contractions.

The hydrosalpinx is less suitable for implantation because its relaxed wall can be easily compressed and may become adherent.

The chief indications for the operation are affections in the isthmic portion of the tubes. When no portions of the fallopian tubes are suitable for implantation, the implantation of ovarian tissue within the uterine cavity may be considered.

The author reports also another case of tubal implantation.  
VON WEINZIERL (G)

## EXTERNAL GENITALIA

**McGlinn J. A. The Treatment of Granuloma Inguinale of the Vulva with Tartar Emetic**  
*Am J Obst & Gynec* 1926 xii 665

Abel of the Johns Hopkins University has prepared two antimonials, sodium antimony thioglycollate and a new synthetic compound, the triamide of thioglycolic acid. Inguinal granuloma is endemic in northern latitudes and should be suspected in any vulvar lesion which resists ordinary treatment. Antimony is a specific for this disease. As the lesions have a tendency to recur, ten intravenous injections should be given after complete healing has occurred.  
E. L. CORNELL, M.D.

## MISCELLANEOUS

**Lynch F. W. The Frequency and Meaning of Backache in Gynecology** *Am J Obst & Gynec*, 1926 xii 719

Sacral or sacrolumbar backache was a complaint in 49 per cent of 1,041 women who came to gynecological operation.

It was present in 15 per cent of the 28 cases of ovarian tumor, 34 per cent of the 101 cases of fibroids, 49 per cent of the 434 cases of pelvic inflammatory disease that came to abdominal operation, 61 per cent of the 290 cases of retrodisplacement (in most of these the retrodisplacement was combined with descent, cervical injuries, and vaginal relaxation), 71 per cent of the 125 cases of marked vaginal relaxation in women under 40 years of age, and 22 per cent of the sixty three cases of complete prolapse.

The backache may be ascribed to the gynecological condition because it remained cured for periods ranging from one to eight years in 76.5 per cent of the 510 cases in which it was a preoperative symptom.

Of the cases in which backache was present before the operation, it was cured in 50 per cent of those of ovarian tumor, 72 per cent of those of chronic pelvic inflammation, 79 per cent of those of relaxed vaginal outlet in women under 40 years of age, 80 per cent of those of fibroids, 81 per cent of those of retroversion and flexion, and 37 per cent of those of complete procidentia.

Backache in gynecological conditions is due chiefly to pelvic congestion. Comparatively slight defects in posture may favor its development. In from 16.5 per cent to 23.5 per cent of the total number of cases the backache was due to an orthopedic condition.

King stated that the Smith pessary is one of the most valuable single contributions ever made to gynecology. A backache which is not relieved by a properly adjusted pessary will seldom be helped by surgery.  
E. L. CORNELL, M.D.



# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Ask Upmark M E Is the Corpus Luteum Necessary for the Physiological Accomplishment of Pregnancy in the Human Being? *Acta obst et gynec Scand* 1926 v 211

On the basis of cases reported in the literature the author discusses Fraenkel's hypothesis concerning the importance of the corpus luteum for the maintenance of pregnancy during the first two months. He arrives at the conclusion that even if this hypothesis is proved correct in the case of rabbits there is no clear evidence that it applies to human beings. On the contrary there are numerous cases which indicate that it does not apply to women.

Gammeltoft S A and Nyeberg O The Importance of Antenatal Care *Acta obst et gynec Scand* 1926 v 363 380

GAMMELTOFT discusses maternal mortality in relation to antenatal care. In the Lying In Department A of the Rigshospital in Copenhagen Denmark during the period from 1917 to 1925 there were 14 633 confinements. One hundred and twenty one of the women died. The causes of death are tabulated. Twenty nine of the deaths were due to intercurrent diseases. Gammeltoft believes that in numerous cases an examination and treatment during pregnancy would have improved the prognosis. From a review of the figures only he concludes that in thirty nine of the 121 fatal cases prophylactic treatment would probably have prevented the fatality.

NYEBERG reports upon results obtained in the antenatal clinic and the department for the treatment of diseases associated with pregnancy. He first gives a brief review of the history of antenatal care in Denmark from 1840 when women who desired to be delivered in a maternity hospital entered the hospital for examination six weeks before delivery up to the establishment of a department for the treatment of diseases associated with pregnancy in 1910 an antenatal clinic in 1921 and the Mother's Help Society in 1924. The last mentioned is a private society subsidized by the State and formed by the union of two societies with similar objects which had been in existence for twenty years.

The most important pathological conditions in pregnant women examined during the period from 1922 to 1924 are reviewed. These included anomalies of the pelvis nephritis hyperemesis cardiopathies pulmonary tuberculosis and syphilis. Only a few of the most interesting cases are reported in detail. Pathological conditions were found in 267 of 1141 women examined in the department for the treatment of diseases associated with pregnancy and in

419 of 1850 women examined in the antenatal clinic. The results as regards both the mother and the child are so good that they cannot be considered a statistical coincidence but must be a consequence of the antenatal care.

Williams J W Note on Placentation in Quadruplet and Triplet Pregnancy *Lull Johns Hopkins Hosp Balt* 1926 xxvii 271

Quadruplets are born approximately once in a half million labors. The author describes the placental relations in such a case and in six cases of triplet pregnancy.

Single ovum twins are enclosed within a single chorion and each twin is surrounded by an individual amnion. Twenty four per cent of 280 cases of twin pregnancy studied by the author were of the single ovum type.

In the case of quadruplets reported by Williams the third child was extruded attached to its own placenta. The placenta was of normal consistency. The first two children and the last child were attached to one large fused placenta. Each partition wall consisted of four layers two chorions and two amnions giving evidence that the quadruplets had originated from four separate ova.

Triplet pregnancy may arise from the fertilization of three or two ova or one ovum. In all but the last event the placental relations may present several variations. The latter are described in detail.

MAGNUS P URNES MD

Lundquist B An Unusual Twin Abortion Superfetation? *Acta obst et gynec Scand* 1927 v 436

The author records a case of abortion in a woman 40 years of age who had had seven children and one miscarriage. Her youngest child was 8 months old. Lundquist saw her on Feb 28 1925. Her last menstruation had occurred November 1924 and she became pregnant at that time. The fetus which had been born measured 17 cm. It showed no signs of maceration. It had evidently died immediately before or at the time of delivery. Among the clots that were recovered on expulsion of the placenta there was a small thin walled sac about the size of a plum which contained a fetus 9 cm long. This fetus appeared quite normal. It had rudimentary arms and legs and its eyes were represented by two black points. Microscopically it showed quite evident signs of hemolysis. The age of the large fetus was estimated at 4 months and that of the small one at about 1 month. The small one had been dead for some time.

The author reports this as a case of superfetation.  
HARRY W FINK MD

**Belding D L** The Effect of Treatment of the Syphilitic Pregnant Woman upon the Incidence of Congenital Syphilis *Am J Obst & Gynec*, 1926, vii 839

The author presents a statistical survey of 190 women with positive Wassermann reactions, of whom forty had received treatment during gestation.

These somewhat meager statistics indicate that a large proportion of the children born of untreated syphilitic women never develop syphilis. The transmission of congenital syphilis depends upon the type and duration of the disease in the untreated mother, her resistance, and, to a limited extent, the element of chance. At least some of the excellent results attributed to anti syphilis treatment in the literature would have been obtained without treatment.

In recent active syphilis treatment is necessary to prevent infection of the child. In old or obscure syphilis there is always the possibility of transmission and therefore it is essential that treatment be given every pregnant woman with a diagnosis of syphilis. The treatment of the pregnant woman should be begun early and continued up to the time of delivery.

In a survey of the children of untreated women who had a positive Wassermann reaction during pregnancy it was found that the majority of these children showed no evidence of early congenital syphilis. Of the conceptions of 150 serum positive women who received no treatment during pregnancy, 61.3 per cent resulted in a living, apparently non syphilitic child. Of those of eighty seven women who showed evidence of clinical syphilis, 42.2 per cent and of those of sixty three women who had only a serum positive syphilis 87.4 per cent resulted in a living, apparently non syphilitic child. Women who showed no clinical evidence of syphilis and who had had the disease over five years seldom gave birth to a syphilitic child.

A group of forty women who resembled most closely the eighty seven untreated women with clinical syphilis in respect to the previous effect of the disease received anti syphilis treatment during the gestation period. Living, apparently non syphilitic children resulted from 67.5 per cent of the conceptions. The most striking evidence of the effect of treatment was the lowering of the fetal death rate.

In the discussion of this report KOLMER stated that the thorough and proper treatment of the syphilitic woman during pregnancy has proved to be an efficient, sensible and practical method for preventing prenatal infection of the unborn, particularly if the woman has been infected within five years of her pregnancy. If her syphilitic infection is of longer duration, she may give birth to a non syphilitic child provided nothing has occurred during her pregnancy to stir up the latent infection.

It is now quite well established that pregnancy results in an increase of immunity to syphilis but the disease may be nevertheless present. Kolmer believes that the mother of a syphilitic child should always receive appropriate treatment for the disease.

KLAUDER said that the transmission of syphilis is a matter of vital importance to the obstetrician and it is incumbent upon him to become a syphilologist in order to be familiar with the clinical manifestations of syphilis and the ever changing therapy of the disease.

In recently infected women, conception should be delayed until treatment renders the Wassermann reaction negative.

In many cases bismuth is better suited for the use of the obstetrician than the arsenicals.

E L CORNELL M D

**Beil J W** Postmortem Findings in Ten Cases of Toxæmia of Pregnancy *Am J Obst & Gynec*, 1926, vii 792

This article is based on ten cases of toxæmia in which the condition developed during the last four months of pregnancy. Five of the women had convulsions. The majority had been ill for from a few days to a few months. Jaundice was noted at only one autopsy.

The diaphragm was found on the right side between the third rib and the fourth interspace and on the left side between the fourth rib and the sixth interspace. In one case its lower surface was covered by a subperitoneal hemorrhage. In three cases there were small amounts of fluid in the abdomen. In half of the cases from 50 to 700 c cm of fluid was found in one pleural cavity. In two cases the fluid was clear, in two others it was bloody, and in one case it was purulent.

In half of the group with exudate lung lesions ranging from passive congestion to solid nodules could be demonstrated. Microscopic examination of these lungs revealed oedema, chronic passive congestion, bronchitis, early bronchopneumonia, hemorrhage, and abscess.

The average weight of seven hearts was 325 gm. The individual weights ranged from 260 to 500 gm. The largest heart was that of a woman who weighed about 130 lbs. In every case the pericardium contained from 3 to 50 c cm of fluid. In two cases it was blood stained and in one case purulent. The myocardium was normal in consistency in most cases but soft and flabby in a few. Nothing of importance was noted in the coronary arteries. The aorta was recorded as showing nothing more than a few patches of sclerosis.

The weight of the spleen in seven cases ranged from 90 to 200 gm. The average weight was 170 gm. In six cases the capsule was smooth or tense. Corporules were visible in eight cases. The color varied from pinkish gray to dark brown.

The appendix was present in every case and in no instance showed active acute inflammation. The digestive tract showed no gross lesions. In two instances the stomach was found full of bile stained fluid. No lesion was noted in the pancreas. There was no gross evidence of disease in the adrenals.

The kidneys of eight patients ranged in weight from 120 to 220 gm. The capsule usually stripped

easily leaving a smooth surface. The cortex was often swollen and pale.

The liver weight ranged from 125 to 120 gm, with an average for eight cases of 1,751 gm. In these cases there was little agreement in the liver lesions. The latter included passive congestion, localized fatty infiltration, acute yellow atrophy, infarction, hæmorrhagic necrosis and cellular infiltration (chiefly of portal spaces). These findings indicate that the toxæmia of pregnancy is not dependent upon any one particular hepatic lesion.

E. L. CORNELL M.D.

**Persson E.** Can Eclampsia Be Prevented by Systematic Treatment of Eclampsism? (Kann eine systematisch durchgeführte Behandlung des Eklampsismus der Eklampsie vorbeugen?) *Acta obst. et gynec. Scand.* 1926 v 230

In agreement with the present tendency to regard eclampsia as a late symptom of a general toxæmia of pregnancy, an eclampsism the attempt has been made in Lund since 1906 to diagnose and combat the latter in its earliest stages.

One of the first symptoms is albuminuria. The treatment is dietetic. In more advanced cases resort is had to venesection and possibly abortion. The results of these measures have been encouraging as the number of cases of eclampsia now seems to be in inverse ratio to the number of cases of eclampsism treated.

**Stander H. J.** Studies in Anæsthesia, Anoxæmia, Anhydræmia and Eclampsia with Certain Deductions Concerning the Treatment of Eclampsia. *Am. J. Obst. & Gynec.* 1926 xii 633

In studies on anæsthesia it was found that ether, chloroform, nitrous oxide and ethylene produce changes in the blood constituents very similar to those seen in eclampsia. They cause also pronounced liver lesions and less marked changes in the kidneys. Their use in the treatment of eclampsia seems open to objection.

Blood studies on anoxæmia and eclampsia suggest that in the latter condition deficient oxidation may play a part. Peptone, albumose and histamine produce a blood picture suggesting anhydræmia. Both chemical and pathological evidence indicates that any one of them may be an etiological factor in the causation of eclampsia.

Peptone, albumose and histamine produce degenerative liver lesions similar to those associated with vomiting of pregnancy, but as yet the author hesitates to assume that they play a role in the causation of such vomiting.

The fact that morphine raises the carbon dioxide combining power of the blood and does not damage the liver affords justification for the continuance of its use in the treatment of eclampsia. The chemical and pathological findings with magnesium sulphate speak against its use in eclampsia, but further work is necessary before a definite conclusion can be reached.

Glucose employed alone or with insulin seems to be of value in certain cases of vomiting of pregnancy and eclampsia, but not in all.

The author has found that in mild cases of eclampsia the use of a modified Stroganoff technique has led to a marked reduction in the mortality. The treatment of severe cases is not yet satisfactory. It is a question whether prompt delivery under spinal anæsthesia may not give better results than have been obtained heretofore.

E. L. CORNELL M.D.

**Hewitt J.** The Clinical Condition of the Uterine Wall in Concealed Accidental Hæmorrhage. *Edinburgh M. J.* 1926 xxiii Edinburgh Obst. Soc. 169

**Cameron S. J.** The Treatment of Concealed Accidental Hæmorrhage. *Edinburgh M. J.* 1926 xxiii Edinburgh Obst. Soc. 173

HEWITT states that the retention of blood in concealed hæmorrhage has been attributed to numerous factors such as non dilatation of the cervix, adhesion of the membranes around the os, and pressure of the presenting part on the lower uterine segment, but none of these theories is satisfactory.

In Hewitt's opinion the cause is a maintained and painful tetanic contraction of the uterus. Difficulty in palpating the fetal parts through the abdomen is due not to rigidity of the abdominal wall or the intervention of blood clots and placenta between the examining fingers and the fetus, but to the tonic condition of the uterus. The membranes also are extremely tense, which is not the case in uterine inertia.

The constant pain in concealed hæmorrhage is due to the sustained spasm of the uterus rather than to any damage to the uterine tissue. During this tetanic phase labor cannot advance because of the unremitting cramp-like uterine contractions.

CAMERON believes that the importance of shock as a cause of death during labor in cases of concealed hæmorrhage has been greatly underestimated. He regards it as questionable whether death is ever due to the severity of the intra uterine hæmorrhage alone.

The author rejects rupture of the membranes, the application of an abdominal binder and packing of the vagina as means of arresting the flow of blood. He shows that no amount of pressure from below (principle of the Dublin pack) can control the hæmorrhage from the free anastomosis of the uterine and ovarian arteries.

The most successful method of overcoming the dangers of shock is the administration of morphine in sufficient quantity to maintain the patient in a state of somnolence. Upon her recovery from the shock 0.5 c.c. pituitrin should be given every half hour until labor pains result.

If rupture of the uterus is suspected, cesarean section followed by hysterectomy, if necessary, should be done immediately.

MAGNUS P. URNES M.D.

**Siddall R S, and Hartman, F W** Infarcts of the Placentæ A Study of 700 Consecutive Placentæ *Am J Obst & Gynec*, 1926 xii 683

So called infarcts of the placenta are of four kinds, but are all composed largely of degenerated villi and elements from the maternal blood. In three types, the formation resembles an intravascular thrombosis and depends upon stasis of the maternal blood flow in the intervillous placental space and the presence of areas denuded in some way of their anticoagulative syncytial epithelium. The fourth kind probably represents a simultaneous involvement of all the branches of a stem villus due to a disturbance in the fetoplacental circulation.

Of 700 carefully examined placenta which were delivered consecutively, infarcts of some kind were found in 67.7 per cent. There seemed to be no relationship between their occurrence and the patient's age or number of pregnancies. All types were more frequent in placenta from cases of toxæmia of pregnancy. The presence of infarcts had little or no influence on the welfare of the child.

E L CORNELL M D

## LABOR AND ITS COMPLICATIONS

**Jerlov E** Does the Stimulus for Labor Have Its Origin in the Fetus? (Geht die Reizung zur Entbindungsarbeit vom Fetus aus?) *Acta obst et gynec Scand* 1916 v 128

In a series of experiments the author found that blood taken from the umbilical cord immediately after parturition contains substances which promote the activity of the resected guinea pig uterus to a greater extent than other blood, including that of the mother.

The blood tested was immediately defibrinated and diluted with equal parts of Ringer's solution. The uterus from a freshly killed guinea pig was then placed in this mixture which during the experiment, was oxygenated and kept at a temperature of 39 degrees C. The contractions of the uterus were registered by the usual method.

In the author's opinion the results of these experiments strongly indicate that under normal conditions the stimulus to labor has its origin in the fetus.

**Knaus H** Remarks on Temesváry's Work on the Influence of Extract of Thymus on the Action of the Uterus and Its Practical Application in Obstetrics (Bemerkungen zur Temesváry'schen Arbeit ueber den Einfluss des Thymus-extraktes auf die Uterus-tätigkeit und dessen praktische Anwendung in der Geburtshilfe) *Zentralbl f Gynæk* 1926 l 1304

In a review of Temesváry's work on the influence of thymus extract on the uterus the author found that certain important factors were not given sufficient consideration by Temesváry. He criticises the fact that Temesváry's curves do not have any scale denoting the time and that care was not taken to obtain the uteri for study from young guinea pigs

which had never been subjected to sexual excitement. Temesváry failed also to take into consideration the ovarian cycle, a fact which explains why his findings were so inconstant.

Because of the enormous doses of pituitrin he used (doses which were equivalent to 150 c cm of extract of hypophysis in the case of the human being), Temesváry came to the erroneous conclusion that pituitrin produces, not labor pains, but tetanic contractions. This is not the case when the proper dosage is employed. The relatively large quantities of 3 or 4 c cm of cool fluid added to that in which the uteri were suspended caused a marked thermic stimulation which also should not have been disregarded. On the whole it may be said that valuable results in a study of the hormones can be expected only when abnormal dosages are avoided.

BINZ (G)

**Deutschman D** Painless Childbirth by the Synergistic Method *Med J & Rec* 1926 cxixv, 421

The author believes that with the rapid increase in the number of neurotic women, a by-product of modern civilization, the relief of the pain associated with childbirth has become more necessary. Of the numerous methods that have been tried there are at least two that fulfill all requirements. These are the Freiburg method or "twilight sleep" as used by Kröning and Gauss, and the synergistic method of Gwathmey.

The technique of the Gwathmey method as used at the New York Lying In Hospital is described in detail with several case reports illustrating the absolutely certain action of the method.

HARVEY B MATTHEWS, M D

**Kerr J M Munro** The Technique of Cæsarean Section with Special Reference to the Lower Uterine Segment Incision *Am J Obst & Gynec*, 1926 xii 729

In the classical cæsarean section the formation of a sound scar may be prevented by one or more of the following factors:

- 1 The difficulty in securing complete asepsis because of upward infection from the vagina.
- 2 The state of degeneration of the uterine muscle fibers during the puerperium.
- 3 Irregularity and puckering of the wound due to the irregular distribution of the sheets of muscle forming the uterine wall.
- 4 The state of unrest of the uterus subsequent to the operation.
- 5 The necessity of using ligatures not only as coaptors but also to produce hæmostasis.
- 6 The difficulty of suturing and approximating when the placenta is situated on the anterior wall.

The author discusses the advantages of laparotomies and describes his technique for this procedure in which a transverse incision is made in the lower uterine segment.

In a series of 107 cases there were eighty two clean cases with no deaths and twenty five doubtful cases with four deaths  
F L CORNELL MD

MISCELLANEOUS

Bailey H The Maternal and Infant Mortality in 4 488 Cases in an Outdoor Clinic 1922 1925  
*Am J Obst & Gynec* 1926 xi 817

With close control and adequate facilities a teaching service can be conducted with a considerably lower death rate than that generally prevalent in the community In one outdoor clinic there was a reduction of 50 per cent below the figures for New York State The still birth and neonatal death rate of 5.2 per cent is more than 30 per cent lower than the figures for New York City The author believes that these low figures are due to (1) the transfer of the major operative cases to suitable hospitals as early in the labor as the complications become evident and (2) the aseptic technique in the conduct of labor

In the clinic and the transferred cases there were twelve obstetrical deaths or one in 374 cases—a rate of 2.67 per 1 000 live births and still births In the cases delivered in the clinic there were seven deaths or one in 641 cases a rate of 1.56 per 1000 live births and still births  
L L CORNELL MD

Kamniker H Results with the Luetgje von Mertz Alcohol Extract Reaction (Ergebnisse mit der A E R nach Luetgje v Mertz) *Zentralbl f Gyna k* 1926 l 2301

On the basis of 75 experiments with the alcohol extract reaction of Luetgje von Mertz the author

comes to the conclusion that with the extracts in his possession the prenatal diagnosis of the sex of the fetus cannot be made with sufficient accuracy for practical purposes but that the serological diagnosis of pregnancy may be employed in clinical cases and should be further developed

The experiments reported were carried out with the latest modification of the alcohol extract reaction of Luetgje von Mertz with 98.5 per cent alcohol (serum of the maternal blood incubated for twenty four hours with fetal testicle as a substrate If the fetus is a male this substrate will be attacked by the maternal serum and partially broken down into amino acid like split products These products can be detected qualitatively by the ninhydrin test or quantitatively by the micro Kjeldahl or the Sorensen formol titration method or by means of the interferometer (For a detailed description of the method see *Muenchener medizinische Wochenschrift* 1924 lxxi 998.)

In experiments with carcinoma extract as the substrate the Freund Kammer assertion that women in the late stages of pregnancy react to carcinoma was substantiated Ninety four per cent of all pregnant women whose blood was tested with carcinoma extract gave a positive reaction a fact which speaks strongly against the specificity of the reaction

The pregnancy test was applied in 77.7 per cent of all cases of pregnancy and was correct in 91.5 per cent The strength of the reaction apparently became weaker with the advance of the pregnancy a fact shown also by the interferometric method  
WOLFF (G)

# GENITO-URINARY SURGERY

## ADRENAL, KIDNEY, AND URETER

Colston J A C and Scott W W Horseshoe Kidney with Especial Reference to the Importance of Pre Operative Diagnosis *J Urol* 19 6 319

In horseshoe kidney there is usually a fusion of the lower poles. The bridge or isthmus varies in size, shape and character of tissue. It may be a fibrous band or a membranous cord, but in most cases it is broad and thick and composed of secreting tissue. The isthmus is usually situated anterior to the bifurcation of the large vessels at a level between the fourth and fifth lumbar vertebrae. The renal pelves are never fused and are usually normal in size and structure. The pelves lie in an anterior position. Of great surgical significance are the marked variations and anomalies of the arteries and veins. The vessels are usually multiple or branched and it is not uncommon to find smaller branches from the inferior mesenteric and the common external, and internal iliac vessels and a special artery to the bridge from the aorta.

Rathbun found calculus, hydronephrosis, and pyonephrosis occurring more frequently in horseshoe kidney than all the other lesions combined. The incidence of tuberculosis was also high.

A correct pre operative diagnosis can be made if the condition is borne in mind. The X rays are of great aid. The pyelogram shows the renal pelves to be lower and more toward the midline. All calyces are in a downward direction and some toward the vertebral column. The stereoscopic pyelogram shows the pelvis lying in an anterior position.

At operation the kidney is approached through the usual loin incision. In 108 operations reviewed by Rathbun there were thirteen deaths. The authors believe that a correct pre operative diagnosis would reduce the mortality.

MAURICE MELTZER M D

Karras Z The Clinical Aspects and Diagnosis of Renal Calculi Which Are Permeable to the X Rays (Beitrag zur Klinik und Diagnostik der strahlendurchlassigen Nierensteine) *Zschr f urol Chir* 19 6 66

This article is a review of the development of the roentgenological diagnosis of renal calculi. After the introduction of the Albers Schoenberg compression diaphragm in 1902 the roentgenological demonstration of renal calculi was greatly facilitated. In 1903, Kuemmel and Rumpel contended that every renal stone could be rendered visible by the proper roentgen procedure and that a negative roentgen finding excluded the presence of a stone. This assumption, however, has been found erro-

neous. Immelmann estimated his wrong diagnoses at 3 per cent, Israel (1916) estimated his at 4 per cent, Kuemmel (1919) estimated his at 5 per cent and Cabot (1915) estimated his at not under 15 per cent.

A further technical advance was achieved by the introduction of the Potter Bucky diaphragm. Nevertheless we must still count on an error in diagnosis in from 3 to 5 per cent of the cases. In the presence of a calculus the roentgen findings may be rendered negative by several causes some of which are independent of the stone and others of which are due to the stone. Among the first are deficient emptying of the intestine, mistakes in the roentgenological technique, obesity, rigidity of the abdominal musculature, the projection of the shadow of the stone upon some portion of the skeleton, and the accumulation of pus in the kidney. By careful preparation of the patient and a good technique, most of these causes of error can be eliminated. Occasionally repeated exposures are necessary.

The difficulties offered by the stone itself can seldom be avoided. Absence of a shadow may be due to the small size of the stone or its chemical composition. The demonstrability of the stone depends upon its ability to absorb the roentgen rays as compared with the surrounding tissues and upon its thickness. The stones with the most dense shadows are the calcium stones. Then in order of decreasing density, come those composed of carbonates, oxalates, phosphates. The cystin, xanthin, and uric acid stones give markedly weaker shadows. The hope of being able to determine the chemical composition of renal calculi from the intensity of their shadows has not been realized.

As a method of demonstrating roentgen permeable stones in the roentgen plate, Kuemmel, in 1913 proposed his impregnation procedure with 10 per cent collargol. According to the experiments of Kuemmel Jr, the best results are obtained with a 2 per cent silver nitrate solution. Pyelography also helps in the roentgen diagnosis since a clearing in the shadow of the pelvis may suggest the presence of a stone (Joseph, 1914). Other methods proposed are inflation of the renal pelvis with oxygen or air, pneumoperitoneum, lateral exposure in pyelography, and pneumoradiography of the kidney bed.

A case with a history of stone is reported. A simple roentgenogram was negative, but with the aid of pyelography it was possible to demonstrate a roentgen permeable stone in the pelvis of the left kidney. In the course of six months the stone became denser from the deposit of salts and at the end of that time could be demonstrated by a simple roentgenogram. A pyelotomy confirmed the diagnosis. ZILLMER (Z)

Hunner G L Drainage as a Factor in Renal Disease *Surg Gynec & Obst* 1926 xliii 615

Hunner repeats his previous contention that ureteral stricture is bilateral common and unrecognized by most urologists. In the great majority of cases of hydronephrosis pyelitis calculous disease essential hematuria and many types of medical nephritis it is the primary urinary lesion. Conditions secondary to congenital malformations are due, not to the malformation, but to ureteral stricture.

The cause of ureteral strictures is focal infection. Its treatment is the eradication of foci of infection and dilatation. CLMER HESS, M D

Lisendrath D N and Koll I S The Pyelograph in Diagnosis of Renal and Pararenal Neoplasms *J Am Med Ass* 1926 lxxvii 1640

In the authors opinion pyelography and ureterography are not employed to the extent they should be in the differential diagnosis of intraperitoneal from retroperitoneal tumors.

Certain pyelographic changes are of unquestionable value in the diagnosis of renal neoplasms and polycystic disease. To these deformities the terms dragon spider etc have been applied. The presence of a filling defect is typical of a neoplasm if the presence in the renal pelvis of blood clots fibrinous exudate etc can be excluded.

Deviation of the ureteral (opaque) catheter or of the ureterogram is found in cases of pararenal neoplasms as well as in those of intrarenal neoplasms. In the former there is no change in the contour of the pyelogram but in the latter there may be evidences of rotation or displacement of the kidney. In cases of intrarenal neoplasms on the other hand there are always pyelographic changes in addition to the ureteral displacement.

Familiarity with the many variations in normal pyelograms especially of the pseudo spider type is essential for the avoidance of error in the interpretation of pyelograms.

Certain inflammatory (non malignant) conditions of the fatty capsule (suppurative or fibrous perinephritis) or of the parenchyma of the kidney (atrophic pyelonephritis tuberculosis) may give rise to changes in the pyelogram which greatly resemble those of neoplasms. C TRAVERS STEPHEN, M D

Judd E S Parker B R and Morse H D Tumors of the Kidney and Ureter and Tuberculosis of the Kidney *Surg Clin N Am* 1926 vi 1137

The authors review a number of cases of tumor of the kidney showing the wide variation in symptoms. In one case there were no genito urinary symptoms the complaints being entirely gastric yet when the urine was examined a trace of albumin and an occasional erythrocyte were found. On further examination a diagnosis of renal tumor was made and at operation a hypernephroma was removed. In another case recurrent attacks of severe colicky pain with the passage of many blood clots

occurred at intervals for three and one half years. A diagnosis of papillary tumor of the renal pelvis was made and verified at operation. In neither of these cases were there any symptoms referable to the bladder. The authors point out that a large amount of blood in the urine is indicative of malignant disease especially if bleeding is recurrent.

In a case of primary papillary epithelioma of the ureter the chief symptoms were the passage of large amounts of blood with slight backache. At first the symptoms suggested the passage of a renal stone. On the patient's second visit to the clinic the prostate was removed and tissue from the right ureteral orifice was reported to be inflammatory. At a third visit a definite lesion was found. The right ureteral orifice was of the golf hole type and a ureteral catheter met an impassable obstruction. At operation a primary papillary carcinoma of the ureter was found. The kidney was normal. Usually papillary carcinomata of the ureter are transplants from tumors in the renal pelvis.

What is supposed to be the first reported case of solitary cyst of the kidney and the earliest recorded operative removal in a living child of 8 months is discussed. The mass in the loin was discovered at birth. Very little renal tissue was found the sac being 7.5 cm in diameter. These cysts are believed to be congenital defects and their symptoms are purely mechanical.

In a typical case of tuberculosis of the kidney the symptoms consisted of marked frequency with burning. Acid fast bacilli were found in urine from the left kidney. Cystitis was severe and there were many ulcers. Nephrectomy was advised. At operation the typical large stiff, oedematous ureter was found. The authors emphasize that in tuberculosis of the urinary tract the kidney is the first organ affected but that the disease is probably secondary to a focus in the chest or abdomen. The disease is primarily unilateral and should be treated surgically. Sixty per cent of the patients operated upon are cured and most of those who are not cured had tuberculosis of the opposite kidney.

Meltzer M Papillary Carcinoma of the Renal Pelvis *J Urol* 1926 xvi 335

A review of the literature showed that only 181 cases of papillary carcinoma of the renal pelvis have been reported. Albarran reported forty two cases and Radder thirty one cases of tumor primary in the renal pelvis. Of thirteen tumors primary in the renal pelvis which were reported by the Mayo Clinic eight were papillary carcinomata. Spiess reported forty three malignant tumors and McGown reported forty nine including one of his own. Smith found 178 cases in the literature. Watson reported one.

The author classifies these tumors according to Ewing as (1) papillomata of the pelvis potentially malignant, (2) papillary carcinomata arising from the pelvis epithelia and (3) alveolar carcinomata which represent infiltrating portions of the other types. He classifies them clinically as follows:

1 Papillomatous tumors, which are characterized by transplants to the ureter and bladder, cause bleeding early, and metastasize late. Of the 187 collected cases, 144 belong to this group.

2 Non papillary tumors characterized by direct extension to the ureter. No transplants are found. Hematuria occurs in 50 per cent, and metastases are found in the lymph glands, other organs, and the bones. These are more malignant.

Hematuria occurs in 70 per cent of cases of the papillary type of tumor and 50 per cent of those of the non papillary type. Renal colic is not a constant sign. Palpation of the kidney is usually negative. Visible blood clots may come from one ureter. Renal function is diminished. Tumor cells may be found in the urine. The pyelogram shows a filling defect.

The prognosis is good in cases operated upon before the occurrence of metastasis. Early nephro-ureterectomy is indicated. Postoperative cystoscopic examinations for recurrence are imperative.

The author's case was that of a man 45 years of age. In January, 1924, the patient passed a small quantity of bloody turbid urine and experienced a dull ache in the right renal area. About eleven months later he had a second more severe attack of painless hematuria. Cystoscopy and pyelography showed active bleeding from the right ureteral orifice, and the pyelogram a filling defect in the upper calyces. As the left kidney was demonstrated to be functioning normally, the right kidney was removed. Fraser's pathological diagnosis was papillary carcinoma of the renal pelvis. Since the operation, which was performed December 30, 1924, the patient has been entirely free from symptoms.

J. SYDNEY RITTER, M.D.

Begg, R. C. Nephro Ureteral Anastomosis After Complete Avulsion of the Ureter. *Brit. M. J.* 1926 II 589.

Begg reports the case of a man 42 years of age who had a round calculus about 1 mm. in diameter in the right renal pelvis but almost normal renal function.

Pyelolithotomy was performed. During the operation complete avulsion of the ureter occurred because of extensive ulceration of the pelvis and thinness of its wall. Nephrectomy was undesirable because of the fairly good renal function. The upper end of the ureter was split for  $\frac{1}{2}$  in on the outer surface and stitched to the intrarenal pelvis by sutures passed through the kidney substance. A capsular flap was also turned down over the suture line. The pelvis was opened through the cortex and a drainage tube tied in. The free end of the catheter in the bladder was pulled out through the urethra by means of the cystoscope. The catheter was removed after seven days. At the end of six weeks the wound had healed and a large catheter was passed up to the kidney pelvis. After 10 cm. had been injected into the pelvis, the patient complained of discomfort. Five months later he had completely recovered and was carrying on his regular occupation.

GILBERT J. THOMAS, M.D.

Brown, D. A. Ureterocele. *J. Urol.* 1926, XVI 363.

Ureterocele is usually associated with a tiny ureteral orifice and atony of the intramural portion of the ureter. The weakness of the muscular wall is usually secondary to inflammatory processes in the seminal vesicles or the female pelvic adnexa. The lesion develops progressively. All of the patients whose cases have been reported were adults.

There are no characteristic symptoms. The diagnosis is usually made by cystoscopic examination. The characteristic findings are a glistening cystic tumor at a ureteral orifice, alternating between ballooning and a retraction following the influx of urine into the dilated region. The best treatment is fulguration.

MAURICE MELTZER, M.D.

Laws, G. M. Ureteral Obstruction in Women. *Am. J. Obst. & Gynec.* 1926 VII 802.

This report is based chiefly upon a study of the last fifty patients examined by the author by ureteral catheterization on the gynecological service of the Presbyterian Hospital, Philadelphia, in whom more or less ureteral obstruction was found.

The principal clinical diagnoses were the following: nephroptosis and hydronephrosis (non infected) in five cases, pyelitis, chronic or recurrent, in four, pyonephrosis in four, pyonephrosis and renal calculus in three, pyelitis of pregnancy and the puerperium in five, ureteral anomaly in two, ureteral stricture, traumatic, in one, ureteral stenosis in eight, and ureteral calculus in eighteen.

At operation, the obstructive lesion was found to be a stricture in six cases. In one case it was tuberculous in two cases, traumatic, due to injury of the ureter during a complete hysterectomy, and in three cases, inflammatory. It is believed that some of the cases with regard to which the term 'stenosis' was used were cases of stricture, but this was not definitely proved.

In women there are various types of ureteral obstruction that are more frequent than the obstruction caused by a ureteral calculus. They are found associated with dilatation of the ureter, hydronephrosis, or back pressure effects on the renal parenchyma. When these symptoms are present and a calculus is not demonstrable, an examination should be made to determine the patency of the ureter. The symptoms of ureteral stenosis are essentially similar to those produced by stone. The treatment of choice is gentle gradual dilatation.

In the discussion of this report, OUTERBRIDGE said that frequently obstruction to the catheter is found at one time, whereas at another time the catheter passes without difficulty. Pyelitis will not clear up in the presence of definite obstruction. In the pyelitis of pregnancy the passage of a ureteral catheter clears the symptoms very quickly.

GINSBURG reported that he finds strictures of the ureter in the female very frequently. The urinary output in these cases is surprisingly good even when there is a moderate degree of hydronephrosis.

E. L. CORNELL, M.D.



**Herger C C and Schreiner B F** Strictured Ureters Hydronephrosis and Pyonephrosis Occurring in Cancer of the Cervix Uteri Based on a Study of Eighty Two Cases *Surg Gynec & Obst* 1926 xliii 740

In a study of eighty two cases of far advanced cancer of the cervix the authors found that in a large majority there was a stricture of one or both ureters with accompanying hydronephrosis and pyonephrosis.

As this condition prevailed in a great many cases before radiation was used in the treatment of the cancer the authors believe it logical to conclude that cancer of the cervix with extension into the broad ligament is sufficient of itself to stricture the ureters and cause kidney changes. **ELMER HESS MD**

**Pugh W S** Ureteral Calculi *Ann Surg* 1926 lxxv 835

In the opinion of the author ureteral calculi occur as a result of obstruction to the outflow of urine plus infection and one of the most important organisms causing the infection is the bacillus proteus. Calculi become impacted most frequently in the lower third of the ureter. An impacted calculus may shut off the flow of urine but may not do so if it has a drainage groove.

The formation of ureteral calculi is a condition of middle life occurring more often in women than in men. The most constant signs are haematuria and pyuria. In the treatment of ureteral calculi dilatation of the ureter should always be tried unless there is a marked pyelonephritis or some other contra-indication. As a means of dilatation the author has found the rubber bag dilator contrived by Dour mashkin of great value. If dilatation fails extra-peritoneal ureteral lithotomy is the operation of choice. **HENRY L SANFORD MD**

**Stirling W C** Ureteral Calculi A Review of Forty One Cases *Virginia M Month* 1926 lvi 430

The principal factors in the formation of urinary calculi are infections of the kidney, urinary stasis and excessive excretion of crystalloids in the urine.

It has been estimated that one half of the patients with ureteral stones will pass them without treatment. 25 per cent will pass them following manipulation and the rest will require operative measures for their removal. Approximately 75 per cent of ureteral stones become impacted in the lower segment of the ureter. The incidence of recurrence following the passage of a stone is between 10 and 12 per cent. About 10 per cent of ureteral stones are bilateral.

The location of a suspicious shadow in the roentgenogram may be determined by passing a shadow-graph ureteral catheter on the affected side and then making a stereogram. The poor shadow casting properties of uric acid, cystin and xanthin stones account for the 10 to 15 per cent error of ureterograms in the diagnosis of ureteral calculi.

The average age of the patients whose cases are reviewed by the author was 40 years. The most common symptom was pain. This was present in 95 per cent of the cases. The urine contained red blood cells or pus in 85 per cent.

In three cases an operation was necessary for the removal of an impacted ureteral calculus. On an average three treatments were necessary to secure the passage of the stone. In several instances an indwelling catheter was left in the ureter for from three to six days. This established drainage and considerably reduced the infection. In no instance was there any untoward reaction.

The author describes a forceps which he devised for the removal of calculi impacted in the lower segment of the ureter. **C TRIVERS STEPHEN MD**

**Bumpus H C** Ureteral Meiotomy for the Removal of Stones from the Ureter *J Urol* 1926 xvi 339

Bumpus discusses the removal of stones from the lower portion of the ureter and describes the technique for enlarging the ureteral meatus with the scissors. The procedure is made visible through a direct cystoscope. The scissors with a double-edged movable blade follows into the meatus for about 1 cm behind a short filiform bougie. The blade is then opened and the meatus slit as the blade is withdrawn. Five or six catheters are then passed up into the ureter twisted and withdrawn with the stone.

In ten consecutive cases it was possible to remove the stone at the time of manipulation. In one case the stone caused obstruction and prevented the passage of a catheter or filiform bougie, thus contra-indicating meatotomy and necessitating ureteral lithotomy.

Following manipulation one or two catheters were usually placed in the ureter and allowed to remain for twenty four hours to insure drainage and reduce the possibility of pyelitis. Cystoscopy several weeks after manipulation showed a somewhat larger normally functioning orifice and cystograms taken in the extreme Trendelenburg posture failed to show urinary reflux.

**Fronstein R** Empyema of the Stump of the Ureter (Das Empyem des Harnleiterstumpes) *Ztschr f urol Chir* 1926 xx 183

The muscular tissue disappears from the stump of the ureter that has been left behind after nephrectomy, whereas the mucous membrane and the lumen remain unchanged. As the peristalsis persists the contents of the ureter continue to be emptied into the bladder. This explains the fact that the stump of the ureter left behind usually does not give rise to disturbances. But if the ureter was diseased before the operation it may be responsible for unpleasant complications after nephrectomy. Occasionally a ureteral fistula develops in the nephrectomy wound. A prerequisite for this complication is a change in the valvular mechanism of the ureteral ostium with subsequent reflux. Usually the fistula

closes spontaneously, even though healing often takes a long time

A still more unpleasant complication is the development of an empyema in the stump of the ureter. A prerequisite for this is a disturbance in the passage of the lower section of the ureter. A ureterogram should therefore be made previous to every nephrectomy. If this shows a marked dilatation due to atony, stenosis or the formation of concretions, the ureter must be extirpated primarily or, at least, its proximal end must be sutured into the wound. The best treatment for empyema of the ureter is secondary ureterectomy. The development of empyema of the ureter is not a frequent complication. In a practice of twenty years, the author saw only three cases. GRAHAM (Z)

### BLADDER, URETHRA, AND PENIS

**Helmholz H F** Neuromuscular Dysfunction of the Bladder as a Cause of Chronic Pyelitis in Childhood. *Am J Dis Child* 1926 **xxii** 682

Braasch has divided cases of neuromuscular dysfunction of the bladder into those with definite clinical evidence of involvement of the central nervous system and those in which the lesion is limited to the terminal nerves of the bladder. The first type is termed 'cord bladder' because of associated disease of the spinal cord, the second, the 'atonic bladder,' so called because of its flabby musculature and diminished expulsive power.

Fifteen cases of neuromuscular dysfunction of the bladder in children, six boys and nine girls are reported. The ages ranged from 1 week to 14 years. The diagnosis of cord bladder was made in nine cases after cystoscopic examination. In another case of cord bladder cystoscopic examination was not carried out. Four cases of atonic bladder were observed. In this type of case there may be a loss of motor power only or of both motor and sensory power. A single instance of very marked relaxation of the urethra was found in a girl 7 years of age who had absolutely no urinary control.

The most common complaints were incontinence and frequency. In most cases the bladder could be emptied only by voluntary effort of the abdominal muscles, and then only partially. All but one patient had had attacks of fever and on admittance, were suffering from definite pyuria. Another striking feature was the round or pyriform tumor situated above the symphysis pubis but not always in the median line, which disappeared on catheterization. In most cases the amount of pus in the urine was evidence of marked urinary infection. In most cases the function of the kidney was not seriously impaired. Roentgenograms of the kidneys, ureters, and bladder showed nothing abnormal in these organs, but spina bifida occulta was found in six cases and marked deformity of the spine in three.

Cystoscopic examination definitely established the diagnosis, although the history and roentgenograms frequently made a presumptive diagnosis

possible. Trabeculation and hypertrophy of the bladder as well as relaxation of the internal sphincter, were evident. Reflux into the ureters was found in only four cases. All cystograms showed that the bladders were large and cone shaped, and in some cases irregular and trabeculated.

As in uncomplicated pyelitis flushing of the urinary passages is perhaps the most important single item of treatment. Of equal importance is the prevention of an excess accumulation of urine by drainage of the bladder at regular intervals. The use of hexamethylenamin with ammonium chloride in addition to forcing of fluids has sometimes reduced the amount of pus very markedly, but does not clear up the infection. Local applications only temporarily reduce the evidence of infection. Surgically there is very little to suggest. In certain cases with out infection of the upper urinary passage or with only slight involvement transplantation of the ureters into the sigmoid as in extrophy of the bladder, may be attempted if there is not too great dilatation of the ureters.

**Stern M** Resection of Obstructions at the Vesical Orifice. New Instruments and a New Method. *J Am M Ass* 1916 **lxviii** 1726

It has been observed that large prostates shrink markedly following resection of the intruding lobes or the contracted sphincter. This could not occur if the prostatic lobes were the site of a true hypertrophy. The fact that this change does occur forms the basis upon which rests the rationale of minor surgery of the prostate gland.

Whether the cause of the prostatic enlargement is inflammation or infection from residual urine due to sphincteric contraction or the pressure of intruding fibrotic lobes, it is certain that the relief of these conditions by resection results in the abatement of the inflammatory reaction and a diminution in the size of the organ. The mere removal of sections from either the enlarged lobes or the contracted sphincter causes them to lose their succulence and resume the much reduced size and solid consistency of the non-inflammatory state.

With the author's method any desired number of sections can be removed at a single sitting from either the lateral or the middle prostatic lobes or from the sphincter under the guidance of the eye and without causing bleeding. This is accomplished by a cystoscopic procedure with a cutting current in a water medium by means of a movable loop of tungsten wire, longitudinal spaghetti like sections of tissue being removed. The instruments used are called the 'resectotherm' and 'resectoscope,' respectively.

The resectoscope is essentially a cystoscopic instrument with two lens systems or telescopes. One is of the indirect vision type for examination and diagnosis and the other, of the direct vision type, to be used during the operation.

The resectotherm delivers a radiofrequency current in a continuous flow through the cutting loop

under water without causing sparking. Therefore fulguration effects which result in slough and hemorrhage are eliminated.

After a thorough examination with the indirect vision telescope the direct vision telescope is inserted. The part to be resected is engaged in the fenestra the cutting loop is put into position in front of the eye of the telescope against the engaged tissue and the current then turned on. When the halo and bubbling ensue the loop is advanced until it has traveled the full length of its fenestra (3/4 in.) through the tissue contained therein leaving a clean cut with only a slight discoloration of the surface. In bars and contractures a sufficient number of parallel sections are taken from the floor of the sphincter. When there is considerable lateral lobe encroachment on the lumen of the posterior urethra the sections are removed in a continuous line. As a rule the simple instillation of procaine hydrochloride solution into the urethra and bladder is sufficient for anesthesia but in inflammatory conditions associated with considerable irritability caudal anesthesia is best.

In forty six cases in which this treatment was used there was no bleeding of any importance or reaction of any sort. In many the amelioration of the symptoms was striking after a single treatment. Only a few required a second treatment. Frequency of micturition and residual urine were reduced about 50 per cent in the first week, and in all cases the condition was improved in the course of four weeks. In three cases of complete retention voluntary micturition occurred from two to six weeks after the operation. Overflow dribbling in two cases was arrested immediately.

In obstructive carcinoma resection is more logical than cystotomy for drainage. In cases with bars or contractures nothing more radical is justified. It finds its chief indication in the early stages of prostatic disease as at this time minor surgery should arrest the disease and prevent advanced prostatism.

LOUIS NEUWELT M D

Barney J D Intramural Carcinoma of the Dome of the Bladder *J Urol* 1926 xvi 360

Barney reports the case of intramural carcinoma of the dome of the bladder in a woman 47 years of age. During cystoscopy the bleeding ulceration was masked by the air bubble until the patient was turned on her side and the bubble thereby displaced. After several fulgurations and periods of freedom from hematuria the local condition appeared to be progressing. Therefore fifteen months after the first attack of hematuria an exploratory laparotomy was performed.

A stony hard mass was found infiltrating the upper half of the bladder. This was widely resected. Grossly the growth was limited to the wall penetrating the mucosa only at the site previously seen during cystoscopy. Microscopically it was an undifferentiated, infiltrating primary carcinoma of the bladder wall.

The hematuria recurred six months later and a year after the operation the patient died from complete intestinal obstruction due to metastatic invasion of the intestines and mesentery.

In a review of the literature on vesical tumors the author found that neoplasms in the dome of the bladder are rare, constituting only about 1 per cent of vesical tumors. He quotes Scholl who states that these tumors are usually highly malignant and extensive and since they occur in a comparatively symptomless area of the bladder they grow large before operation is attempted. He concludes that the possibility of such a tumor should be considered whenever the diagnosis of a bladder condition is obscure.

J EDWIN KIRKPATRICK M D

Schmitz H and Lalbe J F F Roentgen Ray Treatment of Inoperable Carcinomata of the Urinary Bladder *J Am M Ass* 1926 lxxvii 1541

Of fifty three cases of advanced and inoperable cancer of the urinary bladder twenty one were treated with radium alone nineteen with the cautery and radium or roentgen irradiation combined and thirteen with massive short wave roentgen rays exclusively.

Following radium treatment the average duration of life was less than eighteen months in the primary cases and eight months in the secondary cases and following treatment by cauterization and irradiation combined it was four months in the primary cases and eight months in the secondary cases.

Of the cases treated with the roentgen rays exclusively seven were primary and six secondary. Four patients with a primary cancer and three with a secondary cancer are now well and free from symptoms. One was treated thirty four months ago two were treated twenty six months ago two twenty months ago and two fourteen months ago. One patient died after two months one after six months and one after seven months.

The authors attribute the good results obtained with short wave roentgen rays to the homogeneous penetration of the cancer bearing area by a known roentgen ray dose the radiation sensitiveness of bladder carcinomata and the absence of trauma and local irritation in this treatment.

GILBERT J THOMAS M D

Judd E S The Treatment of Carcinoma of the Bladder by Radical Surgical Methods *J Am M Ass* 1926 lxxvii 1620

The author points out that carcinoma beginning in the tissues of the bladder rarely metastasizes and that death in such cases is due usually to secondary infection in the kidneys and surrounding tissues. As a rule the malignant growth begins near one of the ureteral orifices and ligation of the ureter with subsequent removal of the kidney is resorted to or the ureter is transplanted. Extraperitoneal resection has been found more advantageous than transperitoneal resection.

Good results following operations for carcinoma of the bladder about equal those obtained from radical operations on the breast, stomach, and colon

In 527 cases of tumor of the bladder seen at the Mayo Clinic the average length of life after the treatment varied with the treatment. The results were most satisfactory in the cases treated by radium irradiation and fulguration the average length of life being 36.7 months. Many of the tumors in this group were of low malignancy and some were definitely benign. Following radium irradiation and excision or resection the average length of life was 21.56 months, following radical operation alone it was 18.57 months and following cautery treatment alone it was 13.57 months. In cases in which only cystostomy was performed the length of life was 6.75 months. Radium irradiation was not usually successful when used alone, but was of value when supplemented by surgical procedures.

In a review of 298 other cases in which surgical treatment with or without radium irradiation was given it was found that fifty patients were still alive after more than five years. Of 308 patients subjected to other forms of treatment only twenty-eight survived for a similar period.

Death in this series was due to diseases which might be expected in any group of persons of advanced age (average 55.92 years) such as pneumonia, uræmia, embolism, and intestinal obstruction. In 167 of the 708 cases however, death was due to carcinoma of the bladder.

The author concludes that early radical operation offers the best results in carcinoma of the bladder, and that procrastination and conservative methods render the case inoperable.

**Chute A. L. Ureteral Transplantation in Bladder Carcinoma.** *J Am U Ass* 1926 LXXVII 1613  
**Waters, C. A. Deep Roentgen Ray Therapy in the Treatment of Carcinoma of the Bladder.** *J Am U Ass* 1916 LXVIII 1618

CHUTE believes that to obtain better results in carcinoma of the bladder more radical surgical measures which require transplantation of the ureters are necessary. Even with such treatment, however, the results are discouraging. In 170 of Chute's operative cases there were eighty-six deaths from the operation or the disease, and recurrences in many others.

Carcinoma of the bladder is relatively slow to give off metastases. Chute believes that many deaths which are attributed to dissemination of a carcinoma of the bladder are due in reality to its recurrence combined with an infected hydronephrosis. Certain bladder growths, especially those of the adenocarcinomatous type, begin in the deeper layers of the bladder wall and extend under the mucosa for a considerable distance without causing any surface change. To prevent local recurrences after palliative operations for infiltrating bladder growths the logical procedure would be the removal of the

bladder itself. If the bladder outlet is involved, nothing but a complete cystectomy can give any permanent result. Radical operation is necessary also for recurrences which are not amenable to the high frequency current.

Cystectomy has been performed relatively infrequently partly because of the technical difficulties of the operation, but chiefly because of the preliminary difficulty of dealing with the ureters satisfactorily. Permanent lumbar nephrostomy has proved unsatisfactory as has the bringing of the ureter to the surface in the loin. The Coffey trans-plantation of the ureters, as modified by others, is destined to have a far reaching influence on the treatment of cancer of the bladder.

A good result has been obtained with total cystectomy anterior to the peritoneum and fixation of the two ureters in the rectum at one sitting.

Keeping a good sized tube in the rectum for several days after implantation of a ureter probably safeguards the suture by preventing the accumulation of gas and bowel contents. Feeding the tube inserted in the ureter into the intestine is better than sewing it to a tube introduced into the rectum. The author suggests also the possibility of using an appropriate sized sterile gum elastic bougie introduced through the incision in the sigmoid with the free end of the tube in the ureter tied over its upper end, as a means of getting the tube through the anus, and using the bougie as a guide.

In Chute's cases there has been no sustained excretion of urine for some time following operation. Excretion did not begin much earlier than thirty-six hours after the operation even in the cases of patients whose kidneys were stimulated because anuria was feared. This gauging of kidney activity and the timely warning given of impending kidney failure are the chief purposes served by the tubes in the ureters.

In the male prostatocystectomy seems indicated. The prostate is separated from the rectum at one operation a few days earlier than the main operation. This is done under spinal anesthesia in order to save the kidneys from extra etherization. The extraperitoneal cystectomy may be done under ether at a later time, and if conditions warrant it the ureters may be implanted into the rectum by the Coffey technique at the same sitting. If conditions do not warrant the implantation of the ureters the tubes inserted into them may be brought out through the abdominal or perineal incision. In both the intraperitoneal and extraperitoneal cystectomy, the locating of the ureter is facilitated by the introduction of a ureteral catheter.

Many patients with bladder tumors die from renal sepsis due to compression of the ureter. None of the methods other than cystectomy or resection of the bladder with re-implantation of the ureters will meet this condition. If a permanent cure seems improbable, the risk of implantation of the ureters into the sigmoid combined with the removal of the bladder may be warranted.

Chute believes that total cystectomy either preceded or followed by transplantation of the ureters is the best method of dealing with extensive infiltrating tumors of the bladder stubborn recurring growths of the papillomatous type and growths involving the bladder outlet

WATERS states that in his opinion the best treatment for superficial papillary carcinoma localized or extensive is a combination of deep X ray therapy with radium applied directly to the surface of the growth. The results of this treatment are better than those obtained when the tumor is given from 600 to 800 mgm hrs of radium before the X ray treatment

With this combined treatment most of these tumors can be destroyed with minimal injury to the bladder and often with but little or no irritation of the bladder mucosa

In infiltrating carcinoma which is still operable radical resection is indicated since it offers the greatest chance of a complete cure

Twenty five per cent of the infiltrating growths in the author's series occupied positions that rendered them inoperable or were so extensive that their radical removal was impossible. In such cases if radium can be applied directly to the growth both radium and deep X ray treatments should be tried since their results are sometimes favorable. If the results are not satisfactory or if the growth is sufficiently localized to warrant the implantation of radium needles the bladder should be opened suprapubically and screened radium needles should be implanted throughout the growth. If the growth is so extensive that a total of more than 2500 mgm hrs is necessary for thorough destruction of the cancerous area by implantation this method is contra indicated

Waters experience with diathermy is too recent to warrant definite conclusions

In conclusion Waters states that the tendency of bladder tumors to recur following their apparent destruction by fulguration irradiation or deep X ray treatment makes it imperative for the patient to return at frequent intervals for cystoscopic examination. In a few of the author's patients who returned for observation the recurrences responded well to radium alone especially those of non infiltrating papillary carcinomata. Even in incurable cases regardless of the treatment employed deep X ray treatment is an excellent palliative measure as it tends to control hemorrhage and to decrease nerve root pains. LOUIS DEWEET M D

**Pugh W S Stricture of the Female Urethra**  
*J Am M Soc 1926 LXXXVII 1792*

Pugh says that his attention was first drawn to the frequency of stricture of the urethra by the relief from urinary symptoms which is experienced by so many women following cystoscopy. Stricture of the female urethra was first described by Lisfranc in 1824 but the first investigation of the condition was made by Stevens of San Francisco in 1920

Osgood found ninety cases of stricture of the female urethra in 169 urological cases and the author found eighty six cases in 460 examinations

Among the causes are trauma including injuries due to childbirth and catheterization tumors such as caruncle and papilloma syphilis and tuberculosis. The author agrees with Skene that in the majority of cases the gonococcus is responsible

The stricture begins on the floor of the urethra and may entirely encircle it. It is soft and dense

The symptoms include increased difficulty in emptying the bladder dribbling dysuria urgency frequency signs of toxemia. The stricture usually occurs in the anterior third of the urethra. In none of the author's cases was it possible to introduce a bulb larger than a No 18 F. The results of stricture are dilatation of the bladder ureters and renal pelvis. The treatment is dilatation preferably gradual the size of the bulb being increased two numbers a week up to size 26 F. The dilatation should be done once a month for a year. The simple remedies should always be tried first but in filiform and smaller strictures operation may be necessary

BENJAMIN F ROLLER M D

## GENITAL ORGANS

**Chute A L The Relation of the Small Obstructive Prostate to Certain Other Bladder Conditions**  
*Boston M & S J 1926 CXC 839*

Chute calls attention to the fact that pathological conditions in the bladder are often due to the small obstructive prostate. He reports two cases. In the first case a suprapubic cystostomy was done for vesical calculus but after the closure of the suprapubic wound there were 10 oz of residual urine and the patient still experienced the difficulty in micturition that accompanies vesical obstruction. A diagnosis of small obstructive prostate was then made and the prostate removed through a perineal incision. The pathological diagnosis was adenomatous hypertrophy. Four years after the prostatectomy the patient reported that he was in perfect physical condition

The second case was that of a 54 year old man with a diverticulum of the bladder. The diverticulum was resected and about a month later several intra urethral masses obstructing the vesical outlet were resected. Some time after the operation the patient reported in good physical condition with no urinary symptoms and no residual urine

Chute concludes that obstruction at the neck of the bladder by any of the several types of small prostate may be a factor in the causation of vesical stone and diverticula. J SYDNEY RITTER M D

**Hunt V C Suprapubic Prostatectomy for Benign Prostatic Hypertrophy A Consideration of Pre Operative and Postoperative Management**  
*Surg Gynec & Obst 1926 XLIII 769*

The successful management of the patient with surgical prostatic obstruction demands meticulous

care in the pre-operative, operative, and postoperative procedures. Pre-operative treatment successfully combats actual or potential uræmia and provides an opportunity to improve the cardiovascular renal reserve. The operation performed under guidance of the eye insures the patient against surgical accidents and the use of regional anaesthesia is devoid of a depressant effect on the kidneys and obviates the occurrence of the postoperative pulmonary complications incident to the inhalation anaesthetics.

### MISCELLANEOUS

**Parmenter F J and Leutenegger C Retention of Urine in Children with and without Demonstrable Cause** *Am J Dis Child* 19 6 1931 60

The authors report in detail two fatal cases of chronic urinary retention in female children without mechanical obstruction of the urethra who were apparently normal up to the first year of age. One died at the age of 2½ years and the other at the age of 5 years. On cystoscopy chronic cystitis, hypertrophy and trabeculation of the bladder were found and a cystogram revealed a unilateral enormously dilated kinked ureter and pyonephrosis. No autopsy was performed. The authors describe the condition as 'an obscure disturbance of innervation or possibly some spinal cord lesion of either inflammatory or toxic nature affecting the bladder center'.

Four other cases illustrating less uncommon causes of urinary retention in children are reported. All of the patients were males. Two were cases of congenital valve formation in the posterior urethra. One of these was treated surgically with recovery. One was a case of spina bifida with faulty bladder innervation producing the urinary retention. This case was obviously incurable. Another was the case of a child of 17 months who had had attacks of dysuria since birth and from whom a urethral stone was removed. A year later after recurrence of the symptoms, a stone was removed from the bladder suprapubically.

The authors call attention to the usual insidiousness of the onset the only symptoms often being a loss of weight and strength, gastric disturbances with nausea and secondary anaemia similar to that of nephritis. An early diagnosis is frequently difficult because of the inability of the child to express himself. In many cases this condition becomes apparent only in its late stages too late for permanent relief from surgery.

J EDWIN KIRKPATRICK, M D

**Scholl A J Cohabitation Colon Bacillary Urinary Tract Infection** *J Am M Ass* 1926 11 1794

Pyelonephritis from colon bacillus infection following attempts at coitus and the wounds incident to rupture of the hymen occur rather frequently but no case has been found in women who have borne

children. The patient usually complains of frequency, dysuria and pain in the renal area. In some cases there may be a high temperature, costovertebral pain, and great prostration. The urine contains both pus and colon bacilli. Sometimes the condition remains latent for years and assumes clinical importance only when a mechanical obstruction such as that produced by pregnancy or stone causes stasis in the urinary tract.

The author reports two cases which he treated successfully by washing the kidney pelvis with 1 per cent mercurochrome 220 soluble and giving methenamine and sodium acid phosphate by mouth.

The colon bacillus is frequently found in the urine of women who are habitually constipated. Trauma permits the infection to gain a foothold. Bauerensen in discussing the tubercle bacillus said that a bladder with an intact mucous membrane cannot be infected. It is probable that in the cases under consideration the bladder is primarily infected and the infection is carried to the kidneys by the blood or lymphatics or by direct ureteral extension. If wounds of the hymen are responsible it must be carried at least part of the way by the blood stream. By whatever route it travels the resulting condition is the same.

Once established postnuptial pyelonephritis has a tendency to become chronic and to resist treatment. There is no satisfactory method of prophylaxis.

In the discussion of this report BRAASCH said that he is now using 10 c cm of 1 per cent mercurochrome intravenously following the injection of 300 c cm of physiological sodium chloride solution. This treatment is especially efficacious when the blood cultures are positive.

VECKI said that he prefers the intravenous injection of sulpharsphenamine to the use of mercurochrome.

KRETSCHMER warned against the frequent error of diagnosing the condition as gonorrhoea.

BENJAMIN F ROLLER, M D

**Martin H W and Arbuthnot R E Spinal Anaesthesia in Urology** *J Am M Ass* 1926 11 1723

From the surgeon's point of view spinal anaesthesia is ideal as it facilitates the operative procedure is associated with only slight risk and with less danger of pulmonary and renal complications than other forms of anaesthesia and gives excellent muscular relaxation, abdominal quiet, usually perfect analgesia and nerve blocking, which aid in the prevention of shock.

In the average case of suprapubic prostatectomy the dangers of spinal anaesthesia are less than those of ether anaesthesia in the same type of patient. Moreover in spinal anaesthesia there is no interference with the ingestion of fluids, which is so necessary to the patient's recovery. Vomiting occurs considerably less often than when ether is used.

Disregarding caudal, parasacral and field block the authors believe that in the average case spinal

anæsthesia is the best form of anæsthesia for litholapaxy, external urethrotomy urinary extravasation suprapubic cystostomy and prostatectomy the excision of vesical diverticula and difficult cystoscopies in patients with extreme bladder irritability from conditions such as vesical contraction, tuberculosis stone diverticula, or tumor

The most serious faults of spinal anæsthesia are the sudden drop in the blood pressure severe depression of the cardiovascular and respiratory systems nausea and vomiting during the operation, and headache. The cases for spinal anæsthesia must be selected with care. In a small percentage there is a temporary paralysis of the sphincter.

In more than 6,000 operations performed under spinal anæsthesia at the Los Angeles General Hospital Los Angeles California there were six deaths. Three were not due to the anæsthetic and two were due to an overdose. The untoward symptoms following spinal anæsthesia include syncope vomiting headache numbness of the feet severe headache and neck pain. The headaches may be prevented by keeping the patient in the recumbent position for several days.

Especially when the operation is to be time consuming extremely nervous patients should be given a preliminary opiate (morphine and atropine) unless this is contra indicated. Unless the operation is to be an abdominal procedure the patient will arrive at the operating room in better condition if he has some orange juice or black coffee with sugar early in the morning.

When there is doubt as to the dosage of anæsthetic indicated it is better to err on the side of too little than too much.

The maximum dose of procaine is 1 g. or 10 gr. If necessary the anæsthetic may be supplemented with nitrous oxide or oxygen. The experience with diathermy should never be exceeded. Spinal anæsthetic should be used with caution. Waters states that one of the advantages of the anæsthetic is that it does not recur following a single operation. Stovaine should never be used as a solvent but distilled water may be used as a solvent. (Martin) prefers distilled water.

The anæsthetic quickly the

of the root pains

W. S. Stricture  
J. Am. Med. Ass. 1926 1

Hugh says that his attention was called to the frequency of stricture of the female urethra following cystitis. The first case was first reported in 1824 but the first investigation was made by Stevens of

hot. Only freshly prepared solutions should be used.

A marked fall in the blood pressure calls for the Trendelenburg position for at least ten minutes. The patient must be carefully watched. Nausea is overcome by oxygen inhalations or the administration of pituitary extract hypodermically. Marked hypotension is relieved by lowering the head. The administration of a few whiffs of nitrous oxide or the hypodermic injection of pituitary extract or epinephrin. The inhalation of ammonia ether or nitrous oxide causes temporary stimulation. Headaches are best relieved by lowering the head the use of sedatives and ice caps or the intravenous administration of saline solution.

The authors draw the following conclusions:

1. Spinal anæsthesia is contra indicated in patients with marked circulatory hypotension and those with myocardial degeneration or anæmia.

2. Its safety and desirability are increased by the addition of light nitrous-oxygen anæsthesia.

3. Central acting drugs are valueless; only drugs with a peripheral pressor action are of value.

4. Blood pressure readings should be taken frequently.

5. The morning cup of black coffee with sugar or orange juice is beneficial.

6. As a rule a preliminary opiate should be given.

7. The needles should be of small caliber and of nickel or nickeloid.

8. Loss of spinal fluid should be avoided as much as possible.

9. In selected and carefully supervised cases the mortality with spinal anæsthesia should be less than 1 in 1,000 which is considerably less than that associated with inhalation anæsthesia.

10. Spinal anæsthesia is most valuable and efficient for operations below the diaphragm when complete muscular relaxation is sought but should be used only with discrimination and for special reasons.

LOUIS NEWELL M.D.

# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

Allen B. An X-Ray Study of the Development of the Ossification Centers of the Skeletal System  
*Radiology* 1926 vii 398

A roentgen ray study of the ossification of the skeleton is valuable in determining (1) whether a fetus is born before term, (2) its age, if it is born before term, and (3) the age of any individual less than 30 years of age. The author includes in his article a table giving the ossification centers, the time of appearance of the centers, and time of union of the first and second centers in the bones of the upper and lower extremities. Roentgen ray study will frequently show which of a pair of twins is the older.

Allen found that, up to the age of 11 years, ossification progresses more rapidly in females than in males. From the eleventh to the fourteenth years the development in the two sexes is equal. After the fourteenth year, the rate of ossification is more rapid

in males than in females. These findings were made in a study of the carpal bones.

CHARLES H. HEACOCK, M.D.

Harris H. A. The Growth of the Long Bones in Childhood, with Special Reference to Certain Bony Striations of the Metaphysis and to the Role of the Vitamins. *Arch. Int. Med.*, 1926, lxxviii 785

Harris describes transverse striations in the long bones of a non rachitic child which are manifestations of cessation of growth and occur not only normally in adolescence but also in all cases of marked decrease in the rate of growth due to acute illness or to starvation and as a part of the healing process in rickets.

The skeletal processes are analyzed in terms of (1) the area of cartilage proliferation related to the water soluble, growth promoting vitamin or vitamins (2) the cartilage calcification and degeneration, related to the enzyme of Robinson or Vitamin

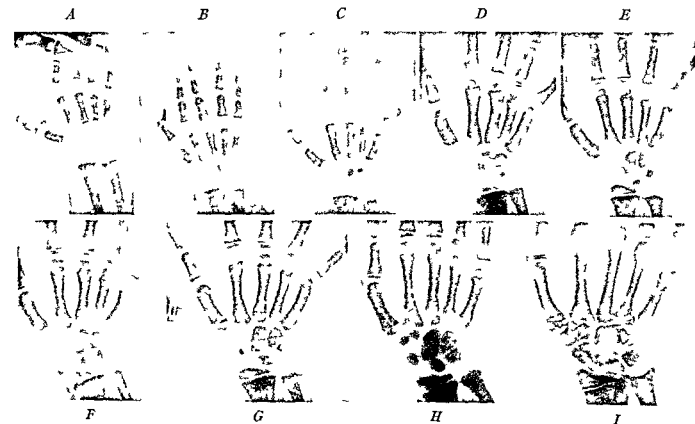


Fig. 1. Development of carpal bones from ages of months 7 days to 13 years 1 month 26 days. A 2 months 7 days. B, 3 months 2 days. C 4 months 3 days. D 3 years 4 months, 23 days. E, 3 years 4 months 5

days. F, 4 years 9 months 9 days. G 5 years, 4 months 19 days. H 8 years 6 months 28 days. I 13 years 1 month 26 days.



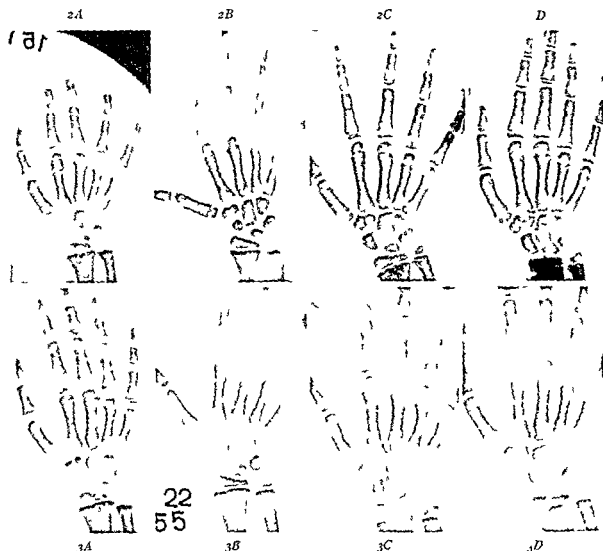


Fig 2 Hand of twins from the age of 4 years 2 months to 9 years 6 months 2A and 3A 4 years 2 months 2B and 3B 6 years 7 months 2C and 3C 8 years 5 months 2D and 3D 9 years 6 months

Illustration in *A Study of the Development of the Ossification Centers of the Skeletal System*

and (3) ossification proper related to the fat soluble Vitamin A proper

The author suggests a rational basis applicable to all ages for the analysis of the processes involved in diseases of cartilage and bone. He states that growth promoting vitamins are water soluble

DAVID H. LEVINTHAL, M.D.

Maass H. The Anatomical Results of Mechanical Obstruction to Growth (Die anatomischen Auswirkungen mechanischer Wachstumswiderstände) *Arch Orthop u Unfall Chir* 1926 XIV 161

MAASS states that so long as the bones continue to grow and their enchondral zones are active the

proper progress of the up building process is of the greatest importance. Disturbances of this process are explained not by biological factors but by the simple laws of the mechanics of motion. The movements related to the formation of bone are subject to the same mechanical laws as all other movements even those of inanimate objects (LAESSLE (Z))

Schmidt A. Histological Studies of Experimentally Produced Pseudarthroses (Histologische Untersuchungen bei experimentellen Pseudarthrosen) *Zeit klin Chir* 1926 CLXXVI 463

To gain some insight into the regressive and regenerative processes which are active in the formation of pseudarthroses Schmidt produced pseu

arthroses in four dogs. In the first animal a section 1 cm long was resected from the upper third of the radius. In the second a 1 cm section was removed from both the radius and the ulna about midway between their upper and lower ends. In the third animal the femur was cut through in about the middle with a Gigli saw; the periosteum was pushed back from the end of the distal fragment for a distance of about 1 cm, and the stump of bone deprived of periosteum was covered by a desulphurated rubber cot which was fixed in place by means of a silver wire encircling the bone. In the fourth dog the femur was sawed through the marrow cavity was curetted out to a depth of  $\frac{1}{2}$  cm and closed with a plug of wax, and a rubber cot was applied to the bone in the same way as in the third dog.

In every instance the wound healed without a reaction. The first dog was killed after four and a half months; the second after three and a half months; the third after three months; and the fourth after two and a half months. In the first animal necropsy revealed a rather rigid pseudarthrosis of the radius. Longitudinal section through the specimen showed that the two ends of the bone had approached each other to within 3 mm of contact. The space between was filled by a fibrous tissue not rich in cells, the fibers of which were looped from one bone end to the other. In places this tissue exhibited a fibrocartilaginous character. A slight periosteal reaction was evident on the two cut ends of the radius and also on the surface of the ulna which was nearest the pseudarthrosis. The marrow cavities of the ends of the radius were closed by masses of spongy osseous tissue. These plugs were rather sharply delimited from the interposed fibrous tissue. Occasional protruding points of bone had been disintegrated by giant cells, but this process of resorption had not been very active. In the region of the periosteal callus formation on both stumps of the radius there were tiny marrow spaces filled with a relatively richly vascular lymphoid marrow. By the process of periosteal callus formation the ends of the pseudarthrosis had been rendered club shaped. Especially in the proximal fragment the old cortex had been eaten away from the marrow cavity.

In the case of the second dog necropsy revealed a comparatively rigid pseudarthrosis with a trifle more mobility and slightly less lateral displacement of the fragments than that found in the first dog. Section disclosed much more distinct and extensive regressive changes than in the first case.

In the third animal there was a more marked longitudinal displacement with angular bending of the femoral axis. The rubber cot and the wire were found lying loose in a small cavity containing a small quantity of clear fluid.

In the fourth dog the rubber cot, the wire, and a sequestrum which had become rounded were found in a similar cavity.

In the third and fourth specimens the proximal stump of the femur had become club shaped as the

result of active new growth from the periosteum. This thickened area was by no means uniformly separated from the neighboring tissues by the ossification process. Among the trabeculae of cancellous bone there remained numerous interstices so that the marrow cavity was separated from the surrounding connective tissue which was poor in cells by a layer of more vascular tissue rich in cells. In certain areas the spicules of spongiosa had been eaten away by giant cells. In the third specimen the distal fragment exhibited on section a peculiar mushroom like point which in the area that had been covered by the rubber cot was narrowed to about one half its diameter elsewhere. The marrow cavity of the entire specimen was spongy, and the cortex was fragmented throughout its entire extent. The distal stump of the fourth specimen exhibited a slightly excavated form and was covered by a thick layer of dense connective tissue rich in cells which resembled granulation tissue only in its most superficial layer. Besides the round sequestrum, there was a thick layer of periosteal new bone formation to the end of the stump.

The last two series of microscopic sections show that operative procedures which endanger the nutrition of the periosteum, especially those in which the bone is encircled by wire, may result in extensive regressive changes in the cortex. Worthwhile of note was the marked connective tissue reaction in the region of the original marrow cavity which extended far beyond the point reached by the wax plug.

These studies demonstrate also the influence of insufficient mechanical demands upon the bones and show that in spite of a marked hyperaemia regenerative process may fail entirely in certain areas and the originally progressive changes may give place to regressive processes.

The author then discusses the theories based on the microscopic and clinical findings. He comes to the conclusion that Marchand's conception of the osteoblasts as derivatives of connective tissue furnishes a satisfactory explanation of the various highly differentiated tissues which are closely associated in pseudarthrosis. The periosteum, he believes, is the chief factor in the regenerative processes, but the endosteum and marrow are also capable of forming callus and new bone. The metaplastic bone formation can be traced only by histological examination; it cannot be studied in the roentgen picture. It is of no practical importance in pseudarthrosis. The interposition of periosteum as a cause of pseudarthrosis has not been satisfactorily demonstrated. Without hyperaemia no regeneration is possible. On the other hand hyperaemia is not the only factor in regeneration. The in-growth of connective tissue from the surrounding regions is a hindrance to regeneration but its effect may be overcome if the tissue is crushed between the ends of the bones and the mobility of the pseudarthrosis is limited by impaction of the fragments.

HAUMAN (Z)

**Karshner R G** Osteopetrosis *Am J Roentgenol*  
1926 **xxi** 423

Osteopetrosis is defined as a hereditary disease essentially a disturbance of the mesenchyme which is manifested primarily by extraordinary thickness and density of the cortical portion of the osseous system at the expense of the medullary portion and gives rise to a diversity of secondary conditions such as multiple fractures epiphyseal deformities physical underdevelopment hydrocephalus optic atrophy imperfect dentition anemia various leukæmic states and metaplasia of bone marrow elements leading to enlargement of the liver spleen and lymph nodes. It has been described heretofore under numerous other names such as marble bones and osteosclerosis but the author prefers the term osteopetrosis because it describes the primary pathological condition bone petrification.

Karshner gives a short historical review of the condition briefly abstracts case histories collected from the literature and reports with photographs and roentgenograms four cases seen by himself. He discusses the condition at some length with regard to its relation to age sex the internal secretions vitamins lues and heredity. The gross and microscopic changes are recorded. The diagnosis is based almost without exception on the roentgen findings. These consist essentially of increased density of the bones of the entire skeletal system. The epiphyses are slow to show ossification and the epiphyseal lines remain unclosed into early adult life.

Brief mention is made also of the course treatment and prognosis of the condition. The treatment is chiefly prophylactic.

**ADOLPH HARTUNG M D**

**Kienboeck R** On the Tumorous Diseases of the Bones Primary and Metastatic *Brit J Radiol*  
1926 **xxi** 374

This is a very excellent and well illustrated summary of the roentgen ray characteristics of bone tumors.

The author divides such tumors into two main groups i.e. primary and secondary.

Group 1 includes the osteomata exostoses chondromata dystrophies with fibrous degeneration of the bone marrow and the formation of central hematomata expansive cysts giant cell tumors malignant sarcomata multiple myelomata multiple lymphomata and infectious pseudo tumors such as result from pus forming cocci tubercle bacilli syphilis etc.

Group 2 includes the metastatic tumors. These the author divides into four types (1) the purely osteolytic usually having their origin in a primary medullary carcinoma (2) the osteolytic with diffuse infiltration which are more difficult to discover usually result from a carcinoma of the thyroid gland and are frequently accompanied by new bone formation (3) strongly mixed osteolytic and osteopoeitic metastases occurring as a rule in older persons and due to a scirrhous carcinoma and (4) purely

osteopoeitic metastases occurring almost always in men of advanced age with a fibrous carcinoma of the prostate

**ROBERT V FLINSTON M D**

**Phemister D B and Gordon J E** The Etiology of Solitary Bone Cyst *J Am M Ass* 1926  
**Lxxxviii** 1429

The solitary bone cyst is essentially a disease of the period of growth. According to one theory it is a degenerated tumor and according to another a localized malacia. A third theory attributes it to hematoma formation, and a fourth to bone marrow infection.

The authors believe that the evidence is most in favor of the infection theory. Bloodgood and Mallory regard the changes in the cyst wall as those of chronic inflammation. Others believe the microscopic changes are those of a low grade infectious osteomyelitis. The destruction usually begins centrally in the end of the shaft. The giant cells in these cysts are of a foreign body type and apparently form from endothelial cells of the blood vessels i.e. from the reticulo endothelial system but not as osteoclasts. As the Lewises have succeeded in growing giant and endothelioid cells *in vitro* from blood stream monocytes another possible source is the monocyte infiltrating from the blood stream.

The course of the condition is similar to that in which large pockets are formed around the roots of teeth with failure of new bone to form about the area of destruction.

The authors report two cases in which cultures yielded streptococcus viridans an organism frequently found in chronic periapical dental infections. In both there was a sufficient leucocytosis to characterize the condition as inflammatory.

**ROBERT V FLINSTON M D**

**Rowlands R P** Myeloma and Cavities in Bone *Brit J Surg* 1926 **xxi** 224

Myeloma is a benign bone tumor growing from red marrow and composed chiefly of multinucleated giant cells embedded in spindle and round cells. It is not necessary to amputate for this tumor. Rowlands reports four cases.

Case 1 was that of a young adult male who sustained a blow on the outer side of the tibia. The injury was followed by a swelling over which egg shell crackling could be felt. At exploration a typical myeloma was found occupying three fourths of the upper end of the tibia. The tumor was shelled out and the cavity curetted and washed with an antiseptic solution. The diagnosis was confirmed by section but at the insistence of the patient's family based on the advice of another surgeon the leg was subsequently amputated.

Case 2 was that of a man 39 years of age who following an injury to the knee one and a half years previously developed a tumor which had been diagnosed as a central sarcoma of the femur. After the application of a tourniquet to the thigh exploration was made through the outer side of the femur.

The growth found was very soft. In some areas it resembled a dark clot and in others was white and almost caseous. The pathologist diagnosed it as myeloma. The growth was completely scraped away and the wound closed, the cavity being allowed to fill with blood. The blood gradually ossified, and when the patient was last seen he was making an uneventful recovery.

The third case was that of a man of 29 years who had had an injury to the knee eight months previously and was admitted to the hospital with a large firm swelling over the external condyle of the femur. X-ray examination indicated a central tumor. At exploration through the outer side of the femur, a typical myeloma was found. The diagnosis was confirmed by microscopic study. The tumor was scraped away and the cavity allowed to fill with blood. The patient made an uneventful recovery. Later roentgenograms showed the cavity filled with an ossified mass.

Case 4 was that of a man 70 years of age who had had pain in the left knee for two months. The roentgenogram showed in the internal tuberosity of the tibia a pale area which suggested myeloma. Operation revealed a jam like mass. This was completely scraped out and the cavity allowed to fill with blood. Uneventful recovery resulted.

The author states that these cases prove that the best way to treat myeloma consists in carefully shelling out the growth and allowing the cavity to fill with blood which later will ossify. To prevent fracture at the site of the operation, proper splinting is necessary until the cavity has ossified.

FRANK G. MURPHY, M.D.

Threthowan W. H. *Massage and Remedial Exercises in Bone and Joint Diseases*. *Guy's Hosp Rep* Lond 1926 LVII: 433.

For mechanical efficiency of the locomotor system an adequate leverage action is essential. The lever must move easily about its fulcrum and with a force sufficient to overcome the external resistance or work to be done. All disorders of the limbs are therefore separable into those affecting the lever itself (the bone), the fulcrum (the joint), the force (nerve muscle), and to complete the illustration, the resistance (static conditions—overwork).

Massage has only two effects—reflex and mechanical. The reflex effect is seen in the relief of pain and spasm by superficial strokings in a case of acute injury. Mechanical effects result from the application of greater pressure. Such pressure is used to improve the circulation of blood and lymph, to mobilize contracted and thickened tissues, and in the abdomen to produce reflex contracture of unstriated intestinal muscle.

The chief movements of massage are stroking, compression, percussion, and vibration. After an acute injury, early active movement is essential for the complete restoration of mechanical function. Massage prepares for early movement. Tremor is a sign of too great active movement. Passive move-

ment, if carried too far, may be harmful because it increases the trauma.

The importance of the early application of physical methods of treatment in recent injuries is becoming increasingly appreciated. The presence of septic infection, open wounds and ulcers should not be regarded as contra indications to such treatment.

The author discusses the treatment of simple fractures without initial displacement, impacted and interlocked fractures, and fractures with gross displacement, the effect on union of movements at the site of fractures, the mobilization treatment of fractures in general, the treatment of fractures into joints, the pathology and treatment of sprains and dislocations, including minor sprains, bruises of articular cartilage, stubbed joint, injury of synovial fringes, and traumatic synovitis, and the pathology and treatment of strain and laceration of muscles and tendons, including tennis leg and elbow, rider's sprain, sprained back, traumatic tenosynovitis, and the postoperative treatment of tendons.

Pemberton R. *Arthritis*. *J Am Med Ass* 1926 LXXVII: 1253.

The author states that arthritis is a manifestation in the joints of an underlying rheumatoid condition involving many tissues of the body. To explain the action of distant foci of infection, the effect of exposure, fatigue, overeating and the menopause, the high incidence of arthritis in middle life and the effect of heat, massage, and other remedial agents, we must admit a disturbance of the underlying physiological function.

Pemberton investigated arthritis from the standpoint of dynamic pathology. In a study of numerous cases he found a lowered basal metabolism in 20 per cent and delayed removal of glucose from the blood after its ingestion by mouth in 60 per cent. This condition was not diabetic. The lowered sugar tolerance was accompanied by a rise in the oxygen content of the blood.

From his experiments Pemberton concludes that at least part of the rheumatic syndrome consists in interference with the blood flow, presumably in the finer capillaries. Measures to increase the flow through the finer capillary beds are beneficial. In many blood counts from arthritic patients there was found a tendency toward a diminution of the cellular elements in the first blood obtained at the extreme periphery.

The disturbance in basal physiology explains the futility of most treatments aimed at one phase of the problem only. Therapeutic measures of value include the removal of the cause, a low calorie diet, colonic massage and irrigation to remove toxins, the use of vaccines, and the injection of non-specific proteins.

The author has found that there is a close contact between the blood stream and the synovial fluid and that substances which were thought to be prevented from entering the joint tissues find access to them by way of the blood stream and the synovial fluid.

Vasodilators may have a beneficial effect by dilating the capillaries about the joint

FRANK G. MURPHY, M.D.

Todd A. H. Syphilitic Arthritis *Bull J Surg* 1926  
xvi 260

The author states that syphilitic arthritis is of frequent occurrence and should be borne in mind whenever a diagnosis of arthritis is made. It occurs in many forms and in varying severity in all stages of syphilis both congenital and acquired.

In congenital syphilis there are two forms: (1) Parrot's syphilitic osteochondritis which is a juxta epiphyseal inflammation usually occurring in the first three months of life and showing the typical roentgen ray picture of an irregular epiphyseal line, widening of the articular space, thickening of the periosteum, cupping of the diaphysis and irregular density of the bone near the cartilage and (2) Clutton's joints, a symmetrical hydrarthrosis affecting both knees and without much pain. In both types the prognosis is good if anti syphilis treatment is instituted early.

In acquired syphilis arthritis occurs in various forms at every stage of the disease. There is no strict delimitation of certain forms to certain stages; one form may merge into another. Usually syphilitic arthritis is more severe in the later stages of syphilis than in the early stages. The prognosis is not good unless the treatment is vigorous.

Arthralgia occurring in secondary syphilis is more an ache than a pain and is chiefly nocturnal. The discomfort is not increased by movement.

Hydrarthrosis in secondary syphilis may be a transient early hydrops or a later and more persistent form. The early transient hydrops usually affects the knees but may be polyarticular. Fluid is abundant and the synovial membrane is swollen. The pain is moderate. The condition responds readily to anti syphilis treatment. The later and more persistent hydrarthrosis may be chronic from the outset or may become chronic following an acute onset. It may be symmetrical but two joints are seldom equally affected by it at any given time. There is a marked tendency to relapse usually at irregular intervals. The discomfort is of moderate severity. The condition may disappear spontaneously or may require anti syphilis treatment.

The plastic form of secondary syphilitic arthritis is much rarer than hydrarthrosis. It is characterized by thickening of the synovial membrane and especially of the perisynovial tissues. The whole joint seems swollen and the swelling has the shape of the joint cavity. There is very little fluid. Such fluid as there is is turbid and thick and gives a positive Wassermann reaction in every instance. The response to treatment is very slow but recovery results in most cases eventually.

Tertiary syphilitic arthritis is characterized in the early stage by distention of the joint with thickening of the synovial membrane. At this stage the condition usually responds quickly to anti syphilis treat-

ment. The later stages which show all degrees of gummatous change may or may not respond quickly to treatment.

The gummatous process may be purely local or may affect the entire joint. The condition may result from congenital or acquired syphilis. Axhausen has described two forms: the synovial and the osseous.

The synovial form occurring chiefly in children is usually due to congenital syphilis. The amount of effusion is usually very considerable and the pain slight. Though the condition is called synovial it is in reality a perisynovitis.

The osseous form when it occurs in children may be primarily an epiphysitis. In adults it resembles an ordinary osteoarthritis. The roentgenogram shows bony changes but as a rule all of the structures of the joint are affected. This condition also may simulate tuberculosis very closely. The prognosis depends upon the amount of change that has taken place before treatment was begun. If the treatment is delayed or inadequate gross osteoarthritic changes or ankylosis may occur. This form of arthritis may be monoarticular.

A pseudo rheumatic type of arthritis occurs in children with congenital or acquired syphilis and more rarely also in adults. In children it sometimes involves several joints simultaneously but when this is the case one joint is more severely affected than another. It may be differentiated from rheumatism by the fact that it does not respond at all to salicylates; its rate of evolution is usually much slower than that of true acute or subacute rheumatism; keratitis occurs in about 75 per cent of the cases and there is little pain. The patient may complain only of slight discomfort when the joints are moved or of stiffness. There is distention of the affected joints but the joints are not red and there is little or no muscular wasting. The temperature remains normal.

In adults the pseudo rheumatic form of arthritis resembles rheumatism very closely. It occurs in young adults and affects several joints in rapid succession. There is often considerable pain which is increased by movement of the joints or pressure upon them. The joints are very tender, swollen and red and the temperature may be raised considerably. However the administration of salicylates is without benefit whereas anti syphilis treatment results in a rapid and permanent cure.

The pseudo rheumatoid form of syphilitic arthritis closely resembles typical rheumatoid arthritis but is characterized by a positive Wassermann reaction and responds to arsenicals and mercury.

The diagnosis of syphilitic arthritis must be based upon a carefully taken family history and the history of the patient's previous diseases and his present condition. Wassermann tests should be made on the blood and on the fluid from the affected joints. Usually the reaction will be positive. If the reaction is doubtful the use of anti syphilis treatment will clear up the diagnosis. The following

clinical features of the condition should be emphasized: painlessness, symmetrical synovitis, unimpairment of health, failure to respond to salicylates, osteoscopic pain and associated evidence of syphilis.

The prognosis depends upon whether or not the case is diagnosed early and whether or not vigorous anti-syphilis treatment is given and continued for a sufficient length of time. The results of anti-syphilis treatment are not nearly so satisfactory in the late cases as in the early ones. FRANK G. MURPHY, M.D.

#### Hench P. S. and Jepson P. N. The Differential Diagnosis and Medical and Orthopedic Care of Several Different Forms of Chronic Arthritis. *Med. Clin. N. Am.* 1926 x 563

In reporting five cases of chronic arthritis to illustrate the various forms of the condition classified according to the cause, the authors discuss the importance, from the standpoint of treatment, of a simplified nomenclature based upon the etiology. The term 'infectious arthritis,' for example, would suggest at once the obliteration of foci of infection and the care of metastatic infection. In traumatic or irritative arthritis the trauma must be checked, eradication of foci is either not specifically indicated or of minor importance. In the senescent form of arthritis the treatment can be only symptomatic, palliative, or to a degree prophylactic since the cause, the retrogressive tissue changes of old age, are in the main unalterable. In chronic rheumatic fever the treatment should consist in the eradication of all foci as soon as possible, intensive salicylate medication, the local application of liniment and heat, and a suitable regimen and prophylaxis. In chronic gouty arthritis a low protein purin free diet is indicated. The fluid intake should be increased, atophan administered and physiotherapy instituted for the relief of the pain.

In all of these cases, proper attention to correct foot balance usually gives relief. Physiotherapeutic measures must be carried out intelligently and orthopedic appliances used when needed.

#### Ely L. W. Chronic Arthritis. Its Treatment with Emetin. *California & West. Med.* 1926 xxxi 625

For two and a half years Ely has been using emetin in selected cases of what he refers to as the second type of arthritis, which includes osteoarthritis, hypertrophic arthritis, and arthritis deformans. The patient is examined for alveolar infection and if this is found it is treated. The stools are examined for protozoa and if these are discovered the full anti-parasite treatment is given.

The full anti-parasite treatment consists in twelve daily injections of 1 gr. of emetin hydrochloride interspersed with three weekly injections of neo-arsphenamine beginning with 0.45 gm. and increasing to 0.9 gm. in the cases of men and 0.6 gm. in the cases of women, and followed by six daily injections of 3 gr. of emetin bismuth iodide.

When protozoa are not found in the stools the neo-arsphenamine is omitted.

If this treatment causes a fall in the blood pressure, a rise in the pulse, nausea, diarrhoea, or severe general malaise it is immediately discontinued.

The author reviews the results in eighty-six cases. From these he concludes that emetin has a distinct value in the treatment of selected cases of chronic arthritis. CHESTER C. GUY, M.D.

#### Seelinger P. The Fate of Effusions of Blood in the Joints. (Zur Frage des Schicksals von Blutergüssen in Gelenken.) *Klin. Wchnschr.* 1926 v 1616

According to general opinion, blood remains fluid in the joint cavities. This is attributed partly to ferment action, partly to the lack of fibrinogen, and partly to the changes effected in the fibrinogen by contact with the endothelium.

Experiments performed by the author on dogs led to the conclusion that there is no demonstrable ferment inhibiting coagulation in either the synovium or the synovial membrane. Coagulation depends on whether there is movement of the joint or not. When the joint is moved, coagulation does not occur because the blood becomes defibrinated by the movement. When the joint is kept at rest after the effusion of blood, clotting occurs and subsequently the formed elements become separated from the clot. HACKENBROCH (Z).

#### Montagne J. Infectious Spondylitis and Growth Spondylitis. A Contribution on 'False Pott's Disease' (Spondylites infectieuses et spondylites de croissance: contribution à l'étude des faux maux de Pott.) *Presse med. Par.* 1926 xxxiv 124

Montagne states that spondylitis and spondylosis are very frequently confused in the literature. They are two very distinct conditions. The term 'spondylitis' should be reserved for chronic inflammations of the spinal column (chronic vertebral rheumatism), and the term spondylosis for subacute inflammations of the spinal column. The latter are generally specific.

Spondylosis differs from spondylitis in its sudden beginning in the course of convalescence from an infectious disease or in the course of a septicæmia, in its definite etiology which can almost always be determined by laboratory examination and in its rapid evolution toward complete recovery without ankylosis under orthopedic treatment with or without vaccine treatment.

The importance of a study of these infectious forms of spondylitis lies in their differential diagnosis from Pott's disease. The chief forms of infectious spondylitis are those of the typhoid group due to typhoid and paratyphoid bacilli, staphylococci, etc. They are subacute forms of osteoarthritis of the spinal column and occur generally in the lumbar region. As they affect the perivertebral tissues particularly, they can be easily demonstrated by roentgenography. Clinically they present a Pott's syndrome in which functional symptoms predominate, especially pain and rigidity of the spinal column.

These forms of spondylitis which simulate tuberculosis of the vertebrae are caused by a large number of infections. They can generally be diagnosed by clinical and laboratory study and roentgen examination.

Another group of spondylitis cases with Pott's syndrome are cases of growth spondylitis. These are difficult to classify because there is no history of infection. The condition comes on during adolescence. A diagnosis can be made only by roentgen examination and a study of the later course of the disease. This group includes the vertebral epiphysitis of adolescence described by Lance Sorrel, and Delahaye certain painful kyphoses and kyphoscolioses in adolescence the vertebral infantile osteochondritis of Calvé and the vertebral apophysitis of adolescence. One of the roentgen signs in growth spondylitis is the vertebral compression which heretofore has been considered peculiar to Pott's disease.

In a certain number of these cases the roentgen examination is negative. There is no sign of change in the epiphyseal laminae or of premature ossification and only sometimes a slight vertebral compression which quickly disappears. However the nature of the disease is shown by its course. In the author's opinion these cases of growth spondylitis without roentgen signs are cases of attenuated staphylococcal osteomyelitis of the spine.

Except in syphilitic and echinococcal spondylitis the prognosis of infectious spondylitis and growth spondylitis is favorable. Orthopedic treatment (rest in bed and the application of plaster) and vaccine or specific treatment generally give excellent results. Surgical treatment (curettage laminectomy etc.) is indicated only in very serious forms of staphylococcal streptococcal and echinococcal spondylitis and its results are uncertain.

ANDREW G. MORGAN, M.D.

**Perman E. On Hæmangiomata in the Spinal Column.** *Acta chirurg Scand.* 1926 lvi 91.

PERMAN reports the case of a woman of 24 years who for two years had had symptoms of compression myelitis and was subjected to laminectomy following a diagnosis of tumor of the spinal cord. The arch of the eighth dorsal vertebra was found to be hypertrophied and its osseous tissue was bleeding.

Although the response to electrical stimulation of the muscles of the leg was almost entirely abolished the operation was followed by complete recovery of mobility as well as of sensibility.

Microscopic examination showed the tumor to be a hæmangioma. According to the roentgenological examination it had infiltrated the entire vertebra. The roentgenogram had a characteristic finely reticulated appearance.

The literature reveals similar cases in which death resulted from compression myelitis. The most prominent features of the clinical picture have been compression symptoms. Root pains have not occurred. Symptoms from the spinal column have

been absent or have appeared only in the later stages of the condition. In one case the vertebra infiltrated by the tumor was entirely compressed. In Perman's opinion a case reported by Gold and differently interpreted by him was a case of hæmangioma of the spinal column.

**Key J. A. The Treatment of Tuberculosis of the Hip.** *J. Missouri State M. Soc.* 1926 xxvii 388.

In the treatment of tuberculosis of the hip the patient's economic condition is an important factor. A tuberculous hip can never be restored to normal; however early the treatment is begun or however faithfully it is carried out. The best result that can be hoped for is a firmly ankylosed joint in good position. Such a joint is useful, painless and safe from a recurrence of the disease.

In the average case in a child conservative treatment requires about four years. Therefore arthrodesis the accepted method of treatment for adults is being more generally recommended for younger patients. For patients over 10 years of age Key advises operation if the disease does not show signs of permanent arrest as he believes that no attempt should be made to obtain motion in a tuberculous hip unless the case is being treated by heliotherapy in a special heliotherapy institute. However he cautions against operation in a fulminating case with fever, great local swelling and heat, rapidly increasing abscesses and progressive loss of weight.

He describes an operation for arthrodesis of the hip which is performed with the Smith Petersen incision and a technique of his own in which the trochanter is loosened and shifted inward and osteoperiosteal grafts are placed between the ilium and the neck of the femur. CHESTER C. GUY, M.D.

**Henderson M. S. Surgical Lesions of the Hip Joint.** *Surg. Clin. N. Am.* 1926 vi 1233.

The author first describes the hip joint and the structures of importance about it and discusses the reasons for its great stability and the difficulty of exposing the joint. The joint may be entered anteriorly, laterally or posteriorly. Henderson uses the Smith Petersen technique but makes a long elliptical incision from midway between the antero-superior and posterosuperior spine posterior to the great trochanter and then anteriorly below the trochanter. In this way contamination of the groin is avoided.

Seven cases are reported in detail—a case of congenital dislocation of the hip in which the shelf operation was done to give stability to the joint and prevent further upward dislocation; two cases of tuberculosis of the hip in which arthrodesis was performed and a flap of bone thrown down from the ilium over the upper end of the femur; a case of osteoarthritis with destruction and overgrowth of the head of the femur in which the head was removed and the neck placed in the acetabulum at the time of the correction of the deformity; the reconstruction operation being advised because of failure of the

arthrodesis operation in this type of case, two cases of ankylosis of the hip in which an arthroplasty was done with the use of fascia lata around the remodeled head after the acetabulum had been reamed out (the type of patient has a great deal to do with the final results of this operation as the patient's co operation is necessary) and a case of fracture of the neck of the femur in which the fracture ends were freshened and a graft from the fibula was introduced through the trochanter into the neck and head.

The author states that in ununited fracture of the hip excellent functional results can be obtained by the bone grafting method in from 75 to 80 per cent of properly selected cases.

**Balensweig I. Femoral Osteochondritis of Adolescents and Its Sequelae. Epiphyseal Separation of the Hip.** *Surg Gynec & Obst* 10 6 xlii 604

The author reports eighteen cases with twenty instances of separation of the femoral capital epiphysis. The cases were equally distributed between the two sexes. The average age of the patients was 13.3 years. Nine of the patients were overgrown. Fifteen of the hips had been subjected to mild trauma but in no instance was the injury severe enough to cause a fracture in a normal child of the same age. There was an ultimate shortening of from  $\frac{1}{8}$  to 1 in. The average was  $\frac{1}{2}$  in.

Following a discussion of the rôle of infection, rickets, endocrine dysfunction and trauma in the development of the condition the author states that there is a striking relationship between osteochondritis deformans juvenilis and femoral osteochondritis of adolescence. He believes that the cause is a low grade infection and that trauma and endocrine dysfunction are contributory factors.

Attention is called to the following sequence: first decade Legg Calve Perthes disease; second decade femoral osteochondritis complicated by varying degrees of slipping of the capital epiphysis; third decade and later osteoarthritis.

DANIEL H. LEVINTHAL, M.D.

**SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC**

**Pitzen P.** Experimental Investigations on the Prevention of Adhesions in the Transplantation of Tendons and the Production of a Rigid Connective Tissue by Chemical Means in the Treatment of Orthopedic Conditions. (Experimentelle Beiträge zur Verhütung von Verwachsungen bei Sehnenverpflanzungen und zur Erzeugung eines straffen Bindegewebes mit chemischen Mitteln sowie über die Behandlung orthopädischer Leiden in Betracht kommt.) *Ztschr f orthop Chir* 1926 xlvii 385

The author reports experiments in which he attempted to find a means of preventing the formation of adhesions between a transplanted tendon and the surrounding structures. Especially in the vicinity of fascia and bones the formation of dense

adhesions must be prevented for at least six weeks. The mobilizing exercises then begun will prevent further difficulty.

Pitzen employed in his experiments autoplasmic fatty tissue, fascia, tendon sheath, veins, and peritoneum, homoplastic tendon sheath, heteroplastic material (which because of its preparation, was really of the nature of alloplastic material) such as hernial sac, fatty tissue prepared in various ways, and pig's bladder, and alloplastic material such as paper bandage steeped in glycerine, parchment paper, celluloid, and celluloid.

Even though the conditions of the experiment were rendered intentionally as unfavorable as possible, the formation of adhesions was prevented by autoplasmic fatty tissue, fascia, and peritoneum and by alloplastic paper bandage, parchment paper, and celluloid. When heteroplastic materials were employed, suppuration and extrusion from the wound occurred in every case except one.

The second part of this report deals with experiments in the production of a strong, dense connective tissue. Such tissue would be desirable in all cases of corrected deformities in which apparatus and splints must be worn until the lax tissues become adapted to the new conditions produced by the correction and are able of themselves to prevent a recurrence of the faulty posture. Since recurrence is not always preventable by the wearing of apparatus and since the use of apparatus is not always possible, a chemical or other method of hastening the process would be of great value.

The experiments reported show that the growth of connective tissue is markedly hastened only when there is a local emigration of leucocytes. A development of connective tissue of any practical importance was observed by the author only in regions where abscesses were formed.

The materials used to stimulate the formation of connective tissue included paper bandage soaked in chemotactic substances such as alkali albuminates of liver and muscle tissue, casein, oil of turpentine and alcohol, formalin, fibrin, and Wundol" used with or without paper. None of these substances produced a dense connective tissue in sufficient quantity to act as a substitute for the wearing of apparatus.

WOHLAUER (2)

**Bennett G. E.** The Use of Fascia for the Reinforcement of Relaxed Joints. *Arch Surg* 1926 xlii 655

There is sometimes found in young persons a type of relaxed knee which functions normally in ordinary activity but does not permit participation in active rugged athletic pursuits. Examination shows the anterior crucial ligament to be stretched, attenuated or torn but as a rule the semilunar cartilage is intact and normal. The disability permits outward rotation of the tibia and an increase in the abduction of the tibia when the leg is in a semiflexed position. When the patient attempts to make a sudden turn with the leg slightly flexed and the



thigh adducted a pseudo locking or slipping out of the knee occurs

The operation advocated by the author for these cases is designed to reinforce the capsule of the joint in such a way that it will help to sustain the leg when it is in this position and will act as a substitute for the anterior crucial ligament

The joint cavity is opened by an incision medial to the inner border of the patella. The debris or fringes of the crucial ligaments are removed and closure is made by overlapping the ligamentous structure and drawing the capsule as tightly as mattress sutures will permit. The fascial covering of the capsule is treated by the same overlapping method. In this way there is formed a thick ligament extending from the inner border of the patella obliquely across the joint. In a few recent cases the author has added strips of fascia to the plication of the capsule reinforcement of the lateral border of the internal ligament

After the operation plaster of Paris is applied for from four to six weeks and at the end of that time gradual exercise and development of the quadriceps and hamstring muscles is begun

In five of the six cases operated upon in which Bennett has used this method the results have been excellent

The operation is indicated only after all conservative measures have failed

In cases of recurrent dislocation of the shoulder the joint is approached through an anterior incision extending from the acromion process downward separating the fibers of the deltoid and exposing the anterior and inferior part of the capsule. The tendon of the long head of the biceps is identified and used as a guide to the line of fascial suture. A strip of fascia is taken from the fascia lata fixed to the Gallie type of needle and the arm being rotated externally is laced into the capsule in a zig zag fashion. The capsule is then drawn taut and the lacing fixed firmly to the capsule by chromic catgut sutures. The fascia is then passed through the tip of the acromion process either by a needle or through a drillhole in the process fixed at this point and re attached to the anterior part of the capsule. The technique is shown in excellent illustrations

After the operation the arm is immobilized in a Velpeau bandage for a period of four weeks and at the end of that time gradual use is begun

A GOTTILIE M D

Henderson M S Surgical Treatment for Residual Infantile Paralysis *Minnesota Med* 1926 11 621

Every case of infantile paralysis should be carefully studied before operation is performed. The type of patient and his social status should be taken into consideration as stability must often be secured at the cost of comfort. Before operation is undertaken sufficient time must have elapsed for the paralyzed muscles to have regained maximal power. It is generally accepted that plastic operations should

not be performed before the lapse of eighteen months but manipulation and tenotomy for the correction of deformity may be carried out earlier. The distribution of the paralysis may be such that operation would not be worth while

Two types of operations for infantile paralysis are discussed

1 Procedures for the correction of deformities. These include manipulation followed by retention of the part in the proper position after the correction, tenotomy, the stripping operation, the stripping of the os calcis in pes cavus and the stripping of the tensor fasciae femoris from the iliac crest for the correction of flexion deformity of the hip

2 Procedures to increase function which are usually employed in cases without deformity. In tendon transference the muscle used should nearly approach the muscle for which it is substituted since after transference there is often a 50 per cent loss of power. The most common operations of this type are the transference of the tibialis anticus to replace the peroneus longus or vice versa and the transference of the hamstrings into the patella in cases of flail knee. Frequently performed stabilizing operations are Whitman's astragalectomy with backward displacement of the foot, triple arthrodesis in which the subastragaloid and midtarsal joints are arthrodesed, shoulder arthrodesis with the arm in abduction of from 75 to 80 degrees and forward 70 degrees, the mobility of the scapula being utilized, fusion of the spinous processes and laminae in paralytic scoliosis of the structural type and the bone block operation of the Campbell type for drop foot

Dorrance G M and Wagoner G W Osteoperiosteal Bone Graft *J Am M Soc* 1926 LXXIV 1433

The authors believe that in the hands of the average surgeon the osteoperiosteal bone graft gives better results than the Albee inlay. In experiments on dogs they found the use of the former successful in the repair of bone defects and the ankylosis of joints by bridging. In clinical cases they have used them with good results in the treatment of ununited fracture of the humerus skull defects and fracture of the jaw

They emphasize that when ankylosis is attempted it is advisable to lay the graft extra-articularly

ROBERT V TUNSTEN M D

Séneque J The Late Results of Resection of the Elbow (*Résultats éloignés des résections du coude*) *Presse méd* Par 1926 LXXIV 1351

This article is based on a recent report by Comte of Lyons on the late results of resection of the elbow performed by Ollier in cases of tuberculosis and ankylosis of the elbow. The cases have been followed up for from five to sixty years. Comte reports the power and degree of the different movements of the elbow and illustrates his case histories with roentgenograms

The statistics include fifty five cases of tuberculosis of the elbow in which Ollier performed resection by his method. Eleven were followed up for from five to ten years, thirteen for from ten to twenty years, ten for from twenty to thirty years, thirteen for from thirty to forty years, six for from forty to fifty years, and two for from fifty to sixty years.

Fifteen of the patients were operated upon between the fourteenth and twentieth years of age, twenty four between the twentieth and thirtieth years, six between the thirtieth and fortieth years, four between the fortieth and fiftieth years, and three between the fiftieth and sixtieth years. Although it is very unusual to operate upon patients more than 50 years of age, Ollier obtained good results in two of his three patients who were older than 50 years. In the remaining case a flail joint resulted, but when the arm was supported in a sling the patient was able to write and to do light work. He is not able to hold any weight with the arm in the horizontal position, but when it is hanging down he can hold a weight of 20 kgm.

Comte classifies the functional results as very good when the force and extent of the movements exceed two thirds the normal as good when one of the two factors does not reach this level but is not less than a third normal, as quite good when one of the two factors falls below a third of the normal and as poor when a nearthrosis has not been formed and when there is more or less complete ankylosis or a flail joint. As the object of Ollier's resection is mobilization Comte classifies the results as poor also in cases of ankylosis in good position. In other statistics these are classified as good.

According to this classification, the results were very good in twenty six cases, good in fifteen, fairly good in eight, and poor in six. Among the cases with poor results were four with ankylosis. In three of the latter a secondary operation was performed with good results. In the other the ankylosis did not develop until ten years after the resection and a second operation was not performed. In the two other cases with poor results there was a flail joint, but the patient is able to write and to do light work with the arm supported.

From these findings it is evident that a satisfactory result was obtained in fifty five cases (95 per cent). In 48 per cent of the latter the force and range of motion of the arm operated upon were practically equal to normal.

The anatomical and functional results are not necessarily parallel. The anatomical result may be good and the functional result poor and vice versa. This is shown by the roentgenograms. When Ollier's results are compared with those of other surgeons they are found to be definitely superior. The special feature of Ollier's method is subperiosteal resection. Comte describes the technique in detail.

The statistical study of the results of resections for ankylosis included twelve resections for arthritis. The results were very good in eight cases, good in two, fairly good in one, and poor in one. In the

cases with a poor result the ankylosis recurred but a good result was obtained by a second operation. There were also nine resections for ankylosis following trauma. Four were total resections and five were semiarthral humeral resections. In three of the four cases of total resection a very good result was obtained. In the other the ankylosis recurred but was corrected by a second resection. In the five cases of semiarthral humeral resection the result was very good in four and good in one. Accordingly, the results were satisfactory in all of the cases of this group. In 76 per cent they were very good, in 19 per cent good, and in 4.5 per cent fairly good.

The most important statistics on arthroplasty are those of American surgeons. Statistics on 126 cases in which this operation was done show good results in 75 per cent, mediocre results in 16 per cent, and poor results in 6 per cent. Lexer in 1925 reported eighty four arthroplasties with four poor results and two doubtful results.

From this study the conclusion is drawn that in the case of the elbow resection has proved superior to arthroplasty.

AUDREY G. MORGAN, M.D.

**Nussbaum J.** Late Results of Operation for Wry Neck (Ueber Späteregebnisse nach Schiefhalsoperationen). *Beitr. klin. Chir.* 1926 CXXVI: 573.

The author discusses the various theories regarding the etiology of wry neck and the operative methods for the correction of the condition.

In 76 per cent of forty seven cases in which an operation with partial removal of the sternocleidomastoid muscle was done in the period from 1912 to 1923, subsequent examination showed a corrected posture of the head and the ability to move the head freely in all directions. In eleven cases the functional result was not entirely satisfactory. Asymmetry of the face was present before the operation in forty of the forty seven cases. In twenty four of these forty cases the face was entirely symmetrical at the time of the subsequent examination although in half of them the asymmetry had been present for from eight to seventeen years.

A transverse skin incision just above the clavicle gave the most satisfactory scar. In one case there was a familial history of wry neck. The father and both children of a second marriage (transverse presentation and forceps delivery) showed the condition, whereas ten children by the first wife were entirely free from it.

The author recommends bandaging to fix the head in the corrected position and the use of exercises to overcome the scoliosis.

VOIGT, HOFFMANN (Z)

**Speed J. S.** Reconstruction Operation on the Hip. *J. Am. M. Ass.*, 1926 LXXVII: 1631.

Operative reconstruction of the hip has its widest application in the following conditions: congenital dislocation of the hip in which reduction is impossible or the femoral head cannot be held in the acetabulum.

ulum after reduction paralytic dislocation associated with poliomyelitis and ununited fractures of the neck of the femur after the possibility of bony union has passed

In these three conditions the reconstruction operation has for its object the restoration of stability and the preservation of motion i.e. the formation of a hip which will support the body weight sufficiently well to permit sitting and a reasonable amount of walking without pain or other discomfort

In congenital dislocation of the hip the indications for a reconstruction operation are the following

1 The cases of young children in which the position of the femur cannot be retained after closed reduction the shallow acetabulum allowing the head to slide up over the rim In such cases the recurrence of the dislocation may be prevented by turning bone down from the lateral surface of the ilium to deepen the acetabulum

2 The cases of older children in which reduction is impossible by either closed or open methods In these a new acetabulum must be formed at a higher level on the ilium

3 The cases of adults suffering from pain and instability of the hip In these cases the acetabulum must be deepened with the use of bone from the ilium

In paralytic dislocation due to poliomyelitis all operations on the soft parts have failed as the structures soon stretch allowing the femoral head to become redischarged To keep the head from slipping out a sufficient bony support from the upper part of the acetabulum must be provided A most satisfactory operation is that devised by Campbell which consists in fracturing loose the entire upper portion of the socket and displacing it for about 1 in over the head of the femur thus extending the roof of the acetabulum

In ununited fractures of the femoral neck operation is indicated when there is marked atrophy of the head with absorption of the greater portion of the neck or excessive shortening due to such marked ascent of the trochanter that the remainder of the neck lies above the acetabulum It is indicated also when the patient's economic status requires a rapid convalescence and the assurance of a stable hip The operations performed in such cases are the Lorenz bifurcation operation and the Brackett-Albee and Whitman operations The author has found Whitman's operation the most satisfactory

A GOTTLIB M D

Hey Groves E W Some Contributions to the  
Reconstructive Surgery of the Hip *Lancet*  
1926 cxxi 1055

The author advocates operative reconstruction of the hip in the following conditions

1 Fractures of the neck of the femur In preference to the use of Whitman's method of reduction Groves fixes the fracture by means of a bone peg This gives a much more certain and perfect union

Six weeks after the pegging the patient is allowed to walk with a caliper In cases of old fractures it may be of value to employ a living bone peg taken preferably from the fibula The peg is inserted blindly i.e. without exposure of the joint Slipped epiphysis should also be treated by the pegging operation

2 Ankylosis of the hip Hey Groves advocates as a substitute for the uncertain arthroplasty some form of excision of the head of the femur To secure both mobility and stability after the excision he uses the capsular ligament as an envelope for the cut neck of the femur and cuts the excised head of the femur into two fragments and affixes it to the upper margin of the acetabulum The first procedure secures mobility and the last, stability of the head in the acetabulum

3 Congenital dislocation of the hip In old cases open reduction is essential The femur is best fixed in the socket by forming a new rim to the socket by turning down a part of the outer surface of the iliac bone the method most frequently used or by cutting the capsule from its attachment to the pelvis tying it around the head of the femur gouging out the acetabulum and placing the head of the bone wrapped in the capsule in the socket and anchoring it by stitches which fix the capsule to the floor of the acetabulum

4 Infantile paralysis affecting the hip muscles The lost abductors may be replaced by using the tensor fasciae femoris or the erector spinae muscles Neither of these muscles alone can make a very efficient abductor but when both are combined an efficient abductor of the hip is formed

A GOTTLIB M D

## FRACTURES AND DISLOCATIONS

Mueller W The Importance of Nerve Block Anæsthesia in the Treatment of Fractures and Dislocations (Die Bedeutung der Leitungsanæsthesie fuer die Behandlung der Frakturen und Luxationen) *Med Klin* 1926 xxii 337

At the Marburg Clinic conduction anæsthesia has been found of great value in the treatment of fractures and dislocation in patients over 17 years of age The chief advantage of general anæsthesia the exclusion of psychic elements is of less importance in the treatment of fractures and dislocations as this does not involve extensive surgical procedures Local anæsthesia has greater advantages It does not require emptying of the stomach and is not preceded or followed as is general anæsthesia by a stage of excitement which is very unfavorable in fractures Moreover it facilitates X ray control during and after the reduction Of great importance in conduction anæsthesia is the associated complete relaxation of the muscles which lasts for several hours

In fractures and dislocations of the arm the plexus anæsthesia of Kulenkampf is induced and in those of the leg the various nerves are excluded according to the method of Laewen The sciatic nerve is in

jected according to the method of Keppler at its point of exit from the sciatic notch and the femoral nerve is injected under Poupart's ligament 1 cm lateral to the femoral artery. The obturator nerve is reached at the external margin of the obturator foramen, at a point one fingersbreadth below the spine of the os pubis, the needle being introduced upward and outward. The cutaneous femoris lateralis nerve is blocked according to the well known method of Nystroem by a subcutaneous injection below the anterior superior spine of the ilium.

In conclusion, the author states that conduction anesthesia should be used more generally in the treatment of fractures and dislocations. It is especially indicated if as at the Marburg Clinic considerable importance is attached to the manner in which reduction is effected and the reduction of dislocations is not left entirely to continuous traction. DROMP (Z)

**Simon R. Stulz E. and Lenormant, C.** Osteosynthesis with a Buried Prosthesis in Complicated Diaphyseal Fractures (De l'ostéosynthese à prothèse perdue dans les fractures diaphysaires compliquées) *Bull et mem Soc nat de chir* 1926 lvi 562

In the treatment of complicated fractures by immediate osteosynthesis the authors were unable to obtain entirely normal solid union without complications in a single instance. Solidification was generally delayed, the callus was often excessive and the occurrence of infection frequently made it necessary to re-open the wound for drainage and disinfection. In some cases a secondary sequestrectomy was required.

Since callus results from the ossification of connective tissue which is organized around the fragments at the expense of the muscles and torn periosteum in contact with the hemorrhagic foci, Simon and Stulz attribute delay in the formation of callus to the surgical cleansing of the fracture site—the evacuation of effused blood, the ablation of muscle tissue and aponeurosis and the cleansing of the bone fragments—whereby the conditions necessary for callus formation are disturbed. Because of these procedures only the interfragment callus is formed and this requires a long time even when there is perfect bony apposition.

The large callus with imperfect osteogenesis is attributed to extensive stripping away of the periosteum and the action of the metallic prosthesis.

The open treatment of fractures increases the danger of infection, osteitis and fistula formation.

In support of primary osteosynthesis for compound fractures Dujarier cited war methods. Most war fractures were treated by debridement and the use of apparatus. Depage introduced secondary closure after disinfection. In 1917 primary suture after surgical cleansing was begun but Duval and Picot did a primary suture in only 50 per cent of complicated fractures. The method was not generally applicable, and even when it was followed by

primary healing did not always prevent the development of osteitis. Lenormant is of the opinion that during the war, experience with primary osteosynthesis in complicated fractures was limited and that this procedure should not be used in civil practice. In twenty-one fractures of the upper and lower extremities Lenormant did a primary suture without osteosynthesis in thirteen with four serious failures (death in two cases, amputation in one), and a primary osteosynthesis in eight with four serious failures (two deaths).

With regard to the treatment of compound fractures Lenormant cites the war procedure of Leriche, viz cleansing of the site followed by primary suture to transform the open fracture into a closed fracture and then the usual treatment of closed fracture including secondary osteosynthesis if necessary. This method was used also by Duval and Picot during the war. However, primary suture requires a careful selection of cases, a perfect technique, and close observation of the patient. During the war, surgeons lived practically in the midst of the wounded and were able to note the onset of the slightest change. Moreover the suturing of war fractures was done with an extremely accurate bacteriological control. In the treatment of compound fractures sustained in civil life Leriche leaves the wound open after cleansing it, does a secondary cutaneous suture and performs an osteosynthesis after from ten to fifteen days.

Lenormant distinguishes two types of compound fractures: (1) fractures with a small linear or punctate wound involving only the skin and (2) true compound fractures with large wounds, laceration of the muscles and multiple spicules. The former require only disinfection of the superficial wound and the application of an apparatus as in simple fracture. Healing usually results as in simple fracture. In fractures of the second type Lenormant does a debridement leaving the wound unsutured, applies a dressing and apparatus and sutures or performs a secondary osteosynthesis later. This treatment is long and tedious, requires careful dressings, the devising of apparatus suitable for the particular case, and repeated X-ray examinations but gives the best results.

Simon and Stulz believe that in compound diaphyseal fractures immediate osteosynthesis with a buried prosthesis is contra-indicated and that early secondary osteosynthesis has the same indications as in simple fractures. The immediate operation should consist in surgical cleansing of the fracture site by the removal of contused tissue, free spicules and soiled fragments and the suturing of the integuments. If disinfection is complete the wound will heal by primary intention. In this manner the compound fracture is transformed into a simple fracture which may be treated as such. If necessary secondary osteosynthesis may be done on about the tenth day. In some cases plaster or continuous extension will be sufficient to obtain solid union.

WALTER C. BURKET, M.D.

**Perthes G** The Results of Operations for Habitual Dislocation of the Shoulder with Special Consideration of Our Method (Ueber Ergebnisse der Operationen bei habitueller Schulterluxation mit besonderer Berücksichtigung unseres Verfahrens) *Deutsche Ztschr f Chir* 1925 cxciv 1

The outlook for a permanent cure of habitual dislocation of the shoulder is most favorable when it is possible to correct the underlying anatomical changes. The chief factor responsible for habitual dislocation is insufficient healing of the rent in the capsule received at the original injury. One of the two locations in which such a rent occurs most frequently is the region of the greater tuberosity. In this area it occurs as the result of the action of the supraspinatus, infraspinatus and teres minor muscles. Not rarely a part of or all of the major tuberosity is torn off. When the muscle insertions which are torn off at the first dislocation become healed more posteriorly, the muscles are no longer able to hold the head of the humerus in its proper position.

The other most common site of capsular tears is the anterior margin of the glenoid cavity. Not rarely a portion of the limbus or even of the bony margin of the glenoid cavity is torn off. Under such circumstances the head of the humerus loses its grip anteriorly and glides over the anterior surface of the neck of the scapula. Not rarely a wedge shaped depression is found in the head of the humerus posterior and internal to the greater tuberosity. This is the result and not the cause of the habitual dislocation. It is produced by the pressing of the head of the humerus against the anterior edge of the glenoid fossa. Free bodies in the joint are not uncommon. The only treatment of these cases is surgical.

A skin incision is made at the anterior margin of the deltoid muscle beginning at the coracoid process and perpendicular to this an incision of the acromion is made. In the plane of the latter incision the anterior portion of the deltoid muscle is cut. The joint capsule then lies freely exposed. The capsule is opened by a longitudinal incision made in the intertubercular sulcus. At the upper end of this incision a transverse incision is made either anteriorly or posteriorly. The joint cavity is then palpated. In rupture of the capsule at the greater tuberosity the posterior portion of the capsule is found to be very wide. The end of the retracted muscle is grasped and drawn out and after external rotation of the arm is fixed in position with wire.

In rupture of the capsule at the inner edge of the glenoid cavity the finger reaches over a bony ridge into an accessory cavity of the joint in front of the neck of the scapula. To render this region more accessible the muscles arising from the coracoid process are temporarily displaced by chiseling off the tip of the coracoid process. This is pulled inward and downward with the pectoralis minor the coracobrachialis and the short head of the biceps the anterior surface of the joint capsule being thereby rendered more accessible. When the capsular

incision is lengthened anteriorly, the anterior rim of the glenoid cavity is well exposed and the entrance to the diverticulum in front of the scapula is made visible. Then, with a loop of wire passed through the rest of the anterior margin of the glenoid cavity the joint capsule is fixed to the inner margin of the glenoid cavity. This having been done the capsular incision and the coracoid process are sutured.

After the operation the arm is bandaged for four to ten days first in right angled abduction and then in abduction at an acute angle. Three weeks after the operation motion, hot air treatment and massage are begun. Clinical care is given for about two months.

In eleven cases so treated there were no recurrences. In four cases the period of observation was ten years and in three it was less than three years. In all of the cases the patient regained good function of the shoulder and complete use of the arm. The period required for the return of free motion of the shoulder ranged from three months to one and a half years depending chiefly upon the zeal of the patient. STAHL (Z)

**Rupp F** A Simplified Operative Procedure for Habitual Dislocation of the Shoulder (Ueber ein vereinfachtes Operationsverfahren bei habitueller Schulterluxation) *Deutsche Ztschr f Chir* 1926 cxcviii 70

The intracapsular portion of the biceps tendon begins at the upper margin of the glenoid fossa and extends in an arched course over the head of the humerus. When the tendon becomes tense the semicircular arch tends to become flattened when the arm is raised. This causes considerable pressure on the head of the joint which under pathological conditions such as those present in habitual dislocation of the shoulder may be sufficient to displace the head from the fossa.

The new operative procedure described by the author is based on these anatomical considerations and the findings of experiments performed on cadavers. The sheath of the biceps is split in the sulcus and the tendon on each side is sutured with silk to the periosteum and bone. This results in functional exclusion of the intracapsular portion of the biceps tendon and the prevention of pressure on the head.

In the one case which has been operated upon in this manner there has been no recurrence of the dislocation for nine months. BLOCH (Z)

**Mackenzie J F** A Simple Method of Treating Fractured Clavicle *Med J Australia* 1926 ii 485

In the treatment of fractures of the clavicle Mackenzie puts the patient to bed, brings the affected side to the edge of the bed and allows the arm of the injured side to hang straight down toward the floor. This position is maintained for four hours. Then for the remainder of the treatment the patient is allowed to rest his elbow on a pillow on a chair.

beside the bed in an easy position but yet with some slight drag on the shoulder. Two cases are reported, one that of a man 65 years of age and the other that of a young male adult. In both, the treatment gave immediate relief from the pain and an excellent result.

The author states that he has never had a failure with this method and has used it for years.

FRANK G. MURPHY, M.D.

**Roux Berger J. L. Fractures of the Humerus and Radial Paralysis** (Fractures de l'humérus et paralysie radiale) *Bull. et mém. Soc. nat. de chir.* 19 6 lu 551

In an aviation accident an army officer sustained an oblique fracture of the middle of the humerus with marked displacement and complete radial paralysis. Attempted reduction gave a mediocre result and did not affect the paralysis. Eight days after the accident, Roux Berger exposed the fracture and nerve by an incision along the external bicipital groove. The contused but unsevered radial nerve was found tensely stretched over the displaced lower fragment. Reduction was effected easily and was maintained by a wire. Solid union resulted and movements reappeared in the region of the radial nerve in about two months.

A young woman sustained a fracture of the middle of the humerus in an automobile accident. Tentative reduction was effected. For ten days the patient had considerable pain. On the twelfth day radial paralysis developed. On the twentieth day an electrical test showed a reaction of complete degeneration. The X-ray revealed a sharp point on the lower fragment. At operation on the twenty-fifth day the nerve was found pierced by a bony spicule on the lower fragment. The nerve was freed, the point smoothed off, and a flap of muscle interposed between the nerve and the bone. No osteosynthesis was done. The fracture united without complications. Two months later movements of the wrist were possible and thereafter became continuously better.

Although spontaneous recovery might have occurred in the first case, the author regards it as inadvisable to leave a radial nerve stretched on the cutting edge of a bony ridge. Verification of the condition of the nerve does not necessitate osteosynthesis. Schwartz prefers operative verification of the condition of the radial nerve after union of the fracture, but Roux Berger emphasizes that operation is much easier and more efficacious when performed soon after the accident.

WALTER C. BURKET, M.D.

**Clayton C. F. Fractures of the Forearm** *South M. J.* 1926 xiv 798

**Venable C. S. Fractures About the Elbow** *South M. J.* 1926 xiv 806

CLAYTON reviews the surgical anatomy of the forearm and discusses the mechanism and diagnosis of common fractures. He describes and shows by

illustrations two simple splints which can be used in the treatment of practically all forearm fractures, one to be employed when the immobilization and traction are to be made in the mid-pronation position, and the other when they are to be made with the arm in full supination.

For cases in which both bones are fractured he recommends immobilization of the wrist and elbow with the elbow in a right angle position. In all fractures of both bones with displacement and all fractures of one bone with overriding, continuous traction with immobilization is indicated.

Fractures of the upper third of the ulna with displacement of the radial head should be put up in supination, while fractures of the ulna with displacement of the fragments toward the radius should be treated in mid-pronation.

Clayton emphasizes the importance of perfect anatomical restoration in Colles' fractures, even when they are impacted and must first be broken up. He treats them with the wrist in flexion, and in severe cases uses also full pronation and ulnar deviation. In cases of fracture of the shafts of bones he immobilizes in mid-pronation.

VENABLE treats his cases of fracture of the olecranon by placing the arm in a simple sling with the elbow at a right angle until the soreness has subsided. He then encourages the use of the arm. Fibrous union of the fragments will transmit the pull of the triceps muscle. Bony union has resulted in his cases even when apposition of the fragments has not been obtained.

In cases of other elbow fractures Venable immobilizes the arm in flexion and allows active motion of 5 or 10 degrees on the third or fourth day. He believes that the treatment of elbow fractures should be standardized by the grouping of types and suggests a classification which he has found of value.

CHESTER C. GUY, M.D.

**Haumann. End Results of Vertebral Fractures** (Enderfolge der Wirbelbrüche) 50 Tag d. deutsch. Ges. f. Chir. Berlin 1926

Because of the mining activities in the vicinity, the hospital of Bochum in Prussia receives a very large number of cases of vertebral fracture. In a period of five years it admitted 204 cases of this kind, not including fractures of the transverse processes. One hundred and thirty of the patients died soon after the injury. In the majority of the cases the upper lumbar and lower thoracic vertebrae were affected. In decreasing order of their involvement, the injured vertebrae were the first lumbar vertebra, the second lumbar, the twelfth thoracic, the third and fourth thoracic, and the eleventh thoracic. The spinal cord was injured in 94.4 per cent of the fractures of the cervical vertebrae, in 59.9 per cent of those of the thoracic vertebrae, and in 42.9 per cent of those of the lumbar vertebrae. The total incidence of spinal cord injury was 62.2 per cent.

Haumann emphasizes the importance in the diagnosis of an X-ray examination in two projections

Errors in the diagnosis are most frequently due to omission of this precaution

In the cases reviewed the treatment of the fractures was purely conservative. Usually it was found sufficient to keep the patient flat on his back with a wedge shaped pillow under the site of the fracture. Fractures of the cervical vertebrae were placed in a Glisson sling. Movement and physiotherapy were begun as soon as possible. The average length of time the patient remained in the hospital was nine and nine tenths weeks. No plaster of Paris or supporting corset was applied. The Henle operation was performed in only a few cases. Patients with transverse myelitis remained in comparatively good condition for a relatively long time (up to five years) in spite of rectal and bladder paralysis and paraplegia. There was no meningitis. In uncomplicated fractures the prognosis was favorable. Twenty-four and five tenths per cent of the patients were able to work after two years, 37.2 per cent after three years, 61.1 per cent after five years, 6 per cent after seven years and 80 per cent after nine years. Permanent compensation was allowed in 5 per cent of the cases and a settlement was made in 10 per cent.

In the discussion of this report KOENIG emphasized the value of such a summary of the end results of treatment. He stated that he was surprised at the early discharge of the patient and the early date at which movement was resumed. For fear of later deformity he has his patients wear a corset.

KRAUSE discussed the severe pain after transverse injuries of the spinal cord. In a case of this kind he stopped the pain by severing the spinal cord at the site of the injury with the Iaquinin cautery.

KOERTI reported that he had known of the occurrence of healing of the injured spinal cord only in fractures of the lower lumbar vertebrae.

HENLE recommended chordotomy for the relief of the pain discussed by Krause. He described measures of a technical nature to prevent injury of the pyramidal fibers. He performed a chordotomy in two cases of stump neuralgia with good results.

VON HOFMEISTER emphasized the importance of great care in the diagnosis of transverse lesion. Three years ago he performed a laminectomy on the first lumbar vertebra in a case in which such a diagnosis had been made and found the lumbar sac tensely constricted at the site of the injury. After removal of the obstruction the cerebrospinal fluid flowed downward and after six months the rectal and bladder paralysis had disappeared. Today three years after the operation the patient is able to go about on crutches.

KUEMMEL also stated that he always performs a laminectomy before considering section of the cord. Sometimes this is followed by improvement as there is no transverse lesion as was at first supposed.

In conclusion Haumann stated that the period of rest has gradually become shorter. Today the period of rest in bed is no longer than six weeks. The pa-

tient is then allowed to get up and physiotherapy is begun as soon as possible. STETTINER (Z)

**Jackson A. A. Fractures of the Pelvis.** *Int. nat. J. Med. & Surg.* 1926 XXXI 381

Jackson reports six cases of pelvic fracture and discusses the treatment. The treatment is rendered difficult by the damage caused by the fragments. In complicated pelvic fractures early surgery is necessary to save life. In about 60 per cent of the cases the bladder and urethra are involved to a greater or less extent and in some cases there is laceration of the pelvic tissues with injury of the blood vessels and nerves.

In the treatment of pelvic fractures an aptic technique is essential. Extraperitoneal bladder rupture is obviously less dangerous than the intraperitoneal type but in both conditions the aperture must be adequately sutured.

ROBERT V. FUNSTON, M.D.

**Harding M. C. Os Calcis Fractures. A New Method of Reduction.** *J. Bone & Joint Surg.* 1926 VIII 720

To effect the reduction of a fractured os calcis the posterior end of the heel must be drawn down so that the weight will be borne on the tuberosities and not on the fracture line. The anterior end of the heel must be pushed up to restore the arch and the broadening of the heel must be corrected.

The knee is flexed over the end or side of the table and a sharp claw retractor is driven into the skin at the back of the heel. This gives traction at the most advantageous point. It is never necessary to cut the tendon of Achilles. Three points of counter pressure are provided. On a stool with a screw top a triangular wooden wedge is placed and the stool screwed up until the wedge presses firmly into the foot at the calcaneocuboid joint. Harding then sharply bends the forefoot down with one hand while with the other he pulls down the retractor until as much correction is obtained as is desired.

In the next step of the procedure a cabinet maker's D clamp is applied to the sides of the os calcis, the pressure points being protected by felt or rubber and the clamp is screwed in slowly until the width is the same as that of the opposite heel which is tested by removing the clamp and applying it to the other heel. Pressure is made at several points for a short time. When the clamp is well screwed in it may be used as a Thomas wrench.

Following the reduction a plaster of Paris bandage is applied with the foot in the corrected position. If desired the clamp and retractor may be left in place until this is done. The plaster is pressed firmly against the side of the heel while it is setting and the cast is left on for about three weeks. Full weight bearing is not allowed for three months. A felt arch is then used to give some support.

Fifteen cases of fracture of the os calcis have been treated by this method. In two of them the condition was bilateral. All of the patients are now at

work. The average time of disability was only five months  
 RUDOLPH S. REICH, M.D.

### ORTHOPEDICS IN GENERAL

Pugh, W. T. G. *Orthopedics at a Country Children's Hospital*. *Proc. Roy. Soc. Med. Lond.* 1926, xx, 131.

The author discusses the treatment of tuberculosis of the hip and spine.

Most of the beds for cases of poliomyelitis at Carshalton, England, are used for cases in the second stage of the disease which begins with the cessation of tenderness and lasts until the condition becomes stationary, perhaps as long as two years. It is during this stage that stretching and fatigue of the muscles must be avoided and deformity prevented. Splintage, heat, and later muscle training are very essential during the first year. Since the number of cases about London is not too great, this treatment can be given better in an institution than in an outpatient department.

With regard to the treatment of spinal tuberculosis, the author stresses the danger of too brief recumbency which may be followed by deformity. He calls attention also to the deformities, such as equinus deformity and genu recurvatum, which may result

from recumbent treatment without proper supervision.

Pugh has developed his own appliances and carriages for the treatment of recumbent cases. These facilitate the nursing care and heliotherapy, permit exercise of the arms, legs, and lungs, and render it unnecessary to confine the patient to the boundaries of the wards.

The kyphosis associated with tuberculosis of the spine, the author corrects by creating compensatory curves above the deformity if it is low in the spine, below it if it is high, and above and below it if it is in the mid dorsal region. After the period of recumbency has passed, he applies a celluloid jacket which can be enlarged as the patient grows.

With regard to the treatment of tuberculosis of the hip, Pugh agrees that the early application of effective traction and heliotherapy to both probable and definite cases would lessen the number of seriously damaged hip joints. General thickening about the joint and sinuses is indicative of a poor result so far as movement is concerned. In the early cases with pain and even those with localized abscess formation, Pugh produces traction of the body weight by raising the foot of the bed or elevating the mattress on a fracture board.

FREDERICK A. JOSTES, M.D.



# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

Campbell J L Fascial Bands in the Treatment of Aneurism *South M J* 1926 xix 795

Prior to the use of strips of fascia lata in the treatment of aneurism metal bands were employed but were found impractical because of erosion. The author describes his modification of Anel's operation.

After exposing the vessel he passes a strip of fascia around it and fixes the strip with a mattress suture of No 1 chromic catgut. In the introduction of the suture a careful estimate is made of the amount of pressure that is required to secure the occlusion necessary to control the flow of blood into the aneurism and distal parts. The margins of the fascia are then approximated by catgut sutures and the long end of the fascial strip is carried over the line of sutures and secured by lateral stitches.

This procedure is preferable to simple ligation as it is associated with less danger of secondary hemorrhage. A silk or catgut ligature may cut through whereas the fascial band instead of injuring the already diseased vessel tends to strengthen it by forming an extra fibrous band around it.

The procedure is not intended to replace the Matas operation when the latter can be done.

RAYMOND GREEN M D

Colp R The Treatment of Pylephlebitis of Appendicular Origin with a Report of Three Cases of Ligation of the Portal Vein *Surg Gynec & Obst* 1926 lxxii 617

The prognosis of pylephlebitis complicating acute appendicitis while grave is not absolutely hopeless. If the diagnosis is made before operation, the surgical procedure of choice is ligation or preferably resection of the ileocolic vein prior to the appendectomy.

If the complication occurs or is recognized after operation surgical intervention is of little avail unless indications point to a definite liver abscess when drainage is indicated.

In certain persons the hepatopetal system can efficiently carry on the portal circulation in the presence of a portal occlusion of pylephlebitic origin.

The ligation of the portal vein in cases of pylephlebitis proved of no value. Because of the peculiar nature of the condition it is very doubtful whether this procedure is ever indicated. If the process has already extended beyond the ileocolic ligature there is still no need for portal ligation since recovery occasionally occurs when all of the primary thrombus has not been removed.

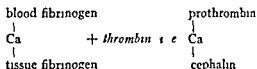
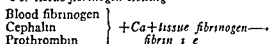
HOWARD A McKNIGHT M D

## BLOOD TRANSFUSION

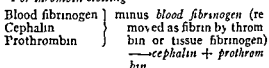
Mills C A Considerations of the Problem of Blood Clotting *Am J M Sc* 1926 clviii 501

In a paper which gives as briefly as possible his ideas concerning the process of blood clotting the author submits the following tentative equations.

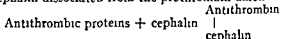
### 1 For tissue fibrinogen clotting



### 2 For thrombin clotting



$\text{Cephalin} + \text{prothrombin} + \text{Ca} \longrightarrow \text{thrombin}$  This reaction is reversible the thrombin being very unstable. The antithrombinic proteins take up the cephalin dissociated from the prothrombin union.



This reaction is not reversible therefore with this and the preceding reaction going on in the same solution all of the cephalin must finally be bound to the antithrombin. However a last reaction is much slower than the preceding one: the addition of cephalin to the serum results in thrombin formation at once; this being followed more slowly by the deviation of the cephalin from the thrombin to the serum antithrombin. (See chart.)

The article is summarized as follows.

1 The main conflicting theories of blood clotting are brought into harmony by the data and discussion presented in this paper and in other papers referred to.

2 Howell's work on antithrombin is confirmed.

3 The direct activation of prothrombin by cephalin and calcium is substantiated.

4 A complete theory of blood clotting involving both tissue fibrinogen and thrombin clotting is presented. It incorporates and harmonizes the best work of the past on this question.

MORRIS H KAHN M D



# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE POSTOPERATIVE TREATMENT

Moyzian Sir B Before and After Operation  
*Lancet* 1926 CCV 799

The advance made in surgery since Lister's time has been phenomenal. I resent day surgical technique is such that it can hardly be improved upon, but improvement is still to be looked for in methods.

First we should teach the sick to seek medical advice earlier in order that treatment may be given before the condition becomes incurable and in order that needless suffering may be prevented. Chronic gastric and duodenal ulcers can be prevented from perforating by surgery. Cholelithiasis can be relieved earlier. Every accessible cancer is at first curable. A greater number of cases of cancer are operated upon today than formerly but many are first seen in the late stages. The laity must be taught to seek treatment for conditions which they have long regarded as trivial or have ignored.

Secondly we should make greater efforts to improve the chances of the patient before operation and to help him after operation. Before surgical operation is undertaken we should be sure that mechanical treatment is necessary and more advisable than medical treatment that the patient is in the best possible physical and mental condition to undergo an operation that the procedure employed is the best procedure for the condition found and that proper postoperative care will be given.

In many conditions such as chronic gastric and duodenal ulcer recurring after medical treatment and cholelithiasis with complications surgery is far safer than medicine.

One of the most valuable procedures for lessening the risk of operation is blood transfusion. This may be used both before and after operation. The transfusion of 15 oz. of blood a few days after a gastrectomy for carcinoma or jejunal ulcer may greatly improve the prognosis.

Before the operation the patient should be encouraged to drink as much fluid as possible for a day or two. A 5 per cent glucose solution is best. As a rule a single evacuation of the intestine the evening before the operation is sufficient. Flatulence is more common in patients who have been purged than in those who have not been purged. Aperients, enemas, eserine, pituitrin, sphincter stretching or the rectal tube should be substituted for cathartics.

Blood examination is of importance. Chloroform is a dangerous anæsthetic the author has not used it for years. One of the most serious postoperative conditions is acidosis. This is best combated by the intravenous administration of a 5 or 10 per cent glucose solution with or without sodium bicar-

bonate. During the past two years the author has been giving insulin with the glucose either intravenously or hypodermically. Careful blood examination and proper treatment with glucose and insulin will render operation as safe for diabetics as for other patients. In diabetes great care must be taken to prevent infection if it is present it must be treated actively.

Alkalosis is more rarely a cause of anxiety. It may be caused by excessive overdosage with alkalis and may occur also in gastric disorders in which free hydrochloric acid is diminished and in hyperpnœa due to increased pulmonary ventilation with excessive loss of carbon dioxide. It is best treated by the intravenous administration of saline solution every eight hours. A weak hydrochloric acid solution may be beneficial.

Blood examination is of value also in cholelithiasis and genito urinary diseases. The cholesterol and urea content of the blood may show a need for preliminary measures before the operation. Preoperative preparation is of value especially before suprapubic prostatectomy. A blood transfusion may so raise the cholesterol content as to strengthen the patient against infection.

In jaundice in which the bleeding used to be such as almost to contra indicate operation the coagulation time can be shortened by the administration of freshly prepared rabbit serum in doses of 20 c.c.m. repeated twice or three times. Five cubic centimeters of a 10 per cent calcium solution given intravenously on three or four consecutive days before and after operation has a similar effect.

In dangerous postoperative vomiting early evacuation of the stomach by the stomach tube and lavage will give relief. A tube passed through the nose may be left in the stomach for days for syringe aspiration. In cases of high fever the introduction of ice water into the stomach causes the stomach to act as an ice bag beneath the heart with some benefit.

In conclusion the author emphasizes that operation is only one incident in the treatment and that pre operative and postoperative care may be necessary for an indefinite period.

MARCELS H HOBART M D

Tinker M B and Sutton H B Inefficiency of  
Most of the Commonly Used Skin Antiseptics  
*J Am Med Ass* 19 6 1337

The authors recently sent out a questionnaire to surgeons asking information as to the antiseptics they used in their practice and their opinion of the results obtained. The replies indicate that there has been little advancement during the past fifteen years along this line. Many of the surgeons who replied

to the questionnaire were entirely satisfied with their technique and results although 70 per cent still use iodine for skin sterilization.

Tests in the laboratory were made to determine the relative efficiency of the standard antiseptics and their value under different conditions. Tests were made of their effect in surface sterilization, their penetration, and their effect in the presence of blood. Strips of rubber gloves were dipped in cultures of the organisms to be tested, permitted to dry, immersed in solutions of the various antiseptics and again permitted to dry. Cultures were then made to determine whether living bacteria or spores were present.

The best results from these tests were obtained by the use of 5 per cent neutral acriflavine and gentian violet in 50 per cent alcohol. The poorest results were obtained with iodine.

To determine the degree of penetration of antiseptics, cultures of bacteria were smeared over the skin into folds, and under the finger nails and scrapings were carefully taken with the use of an aseptic technique and stained deeply with a number of antiseptics such as alcoholic and benzene iodine, trinitrophenol, Harrington's solution, a 5 per cent solution of mercurochrome, acriflavine, and 5 per cent neutral acriflavine and gentian violet in 50 per cent alcohol and lime and soda paste. Only two, the lime and soda paste and acriflavine and gentian violet preparations, showed no cultures. The iodine preparations gave cultures in every case. Dichloramine kills surface bacteria, but has no influence on the deeper ones.

In the tests of the efficiency of antiseptics in the presence of blood the best results were obtained by the use of the acriflavine preparations.

The results were the same whether the preparations were used in weak aqueous solution or weak or strong alcoholic solution. Although first introduced in 1886 the aniline dyes have never come into general use for skin disinfection. They have been employed for years in certain conditions in which penetration is unusually difficult as in eye, ear, nose and throat conditions, and infections in joint cavities, and occasionally in chronic infections of the chest.

The majority of the answers to the questionnaire showed rather uniform satisfaction with the preparation and technique used, but it was noted that many of the largest clinics and hospitals occasionally have an outbreak of skin infections with an occasional death. In the fatal cases the causative organism was the streptococcus hemolyticus, the tetanus bacillus, and the Welch bacillus.

Acriflavine is an expensive preparation, but if employed carefully is the best preparation for general use. Three or four drams of a 5 per cent solution applied to the skin with a swab is usually sufficient to sterilize the skin for the ordinary operation. Improvement in skin sterilization depends upon thorough teaching of the subject to medical students and nurses by means of laboratory tests of the relative efficiency of antiseptics under different conditions, more careful technique in hospital and private work, and better co-operation between practitioners and laboratory workers.

HAROLD M. CAMP, M.D.

# PHYSICOCHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Holzknacht G. Increasing the Effect of the Roentgen Rays by Means of Intravenous Injections of Dextrose (Zur Verstaerkung der Roentgenwirkung mittel t intravenoeser Dextrose injektion nach E. C. Mayer) *Acta radiol* 1926 v 561

This is a report of observations made by the author and others of the effects of intravenous injections of dextrose according to the method of Mayer on the sensibility of carcinoma to roentgen treatment. It was found that when such injections were given a much larger number of patients were benefited by the rays and the favorable effect was obtained quickly. Other methods so far tried to increase the sensibility of carcinoma to the roentgen rays have had no noteworthy effect.

## RADIUM

Cutler M. Comparison of the Effects of Unfiltered and Filtered Radon Tubes Buried in Rabbit Muscle. *Am J Roentgenol* 1926 vii 535

Cutler reports the results of a study of the effects of filtered and unfiltered buried radium emanation upon normal tissue. For this purpose the lumbar muscles of the rabbit were used. The various glass and gold tubes were buried in the center of the dorsal muscles. Gross examination of fresh sections cut perpendicular to the tubes were made.

The use of bare tube applicators resulted in three zones of reaction about the tube: a central dull gray homogeneous area; a middle white opaque firm area; and a peripheral zone of hyperæmia. The size of the lesion varied according to the initial intensity of the radon. When gold implants were used two zones appeared: a central white opaque zone and a hyperæmic peripheral zone. The latter was indistinct if more than a 0.2 mm filter was used. Histologically the central zone consisted of an area of complete or caseation necrosis with complete fragmentation of nuclei; the middle zone showed partial or coagulation necrosis without fragmentation of nuclei; and the zone of hyperæmia a marked accumulation of intravascular and extravascular blood.

With constant millicurie value the more the filter the less the necrosis. With a constant filter the greater the millicurie content the greater the necrosis. The article contains photomicrographs, tables and complete data regarding the experimental work. The following conclusions are reached:

1. The extent of necrosis depends upon the initial millicurie value and the degree of filtration.

2. Unfiltered radon causes an intense reaction with complete necrosis, while filtered radon causes a

less intense reaction with less necrosis. The necrosis is partial rather than complete.

3. During the process of repair there is a fibrous contraction of the lesion from the periphery with calcification of the central zone.

A. JAMES I. ARKIN, M.D.

## MISCELLANEOUS

Rothman S. Principles of Modern Light Therapy. *Brit J Radiol* 1926 xxi 443

Local treatment with light is given to obtain the direct effect of the light on the skin. In general treatment with light reliance is placed on the indirect action of the light on the internal organs and their functions.

It is the author's opinion that in general treatment with light the action of the light is transmitted to the interior of the body through the agency of the involuntary nervous system, this resulting in sympathetic hypotonia. The blood sugar, blood pressure and sugar tolerance are reduced. The sympathetic nerve endings in the skin are paralyzed and as the skin reflexes are wanting there is a general depression of activity of the entire involuntary nervous system. This general depression of sympathetic tone may explain some of the focal reactions seen in tuberculous patients. Because of the paralysis of the nerve endings and the neuroparalytic vasodilatation the diseased organs are more fully irrigated with blood. Dermatitis introduces into the treatment of tuberculous patients an element of considerable danger for in tuberculosis the focal reactions after even a light dermatitis are quite unaccountable and often very serious.

By local treatment the attempt is made to produce a rapid and acute erythema with marked hyperæmia or even an oedematous condition. The chief therapeutic effect of this is the flooding of the tissues with arterial serum. The author does not use Kromayer's method of compression because he does not believe that it causes the rays to penetrate any further and the ensuing reaction—inflammation and engorgement—always extends deep enough of itself.

Light has a remarkable influence on the process of keratinization. Use is made of this fact in the treatment of such skin diseases as psoriasis, acne vulgaris, ichthyosis, lichen ruber and chronic eczema, the basis of which is some anomaly in the process of keratinization. Ultraviolet light has a marked effect in stimulating the basal cells to proliferate. This the germative effect of light is made use of in the treatment of torpid varicose ulcers, ray burns and certain forms of alopecia. In these conditions also it is best to avoid too strong stimulation.

LLEWELLYN R. LEWIS, M.D.

## MISCELLANEOUS

### CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Mitchell L J C A New Method of Treatment of Chilblains *Med J Australia* 1926 11 449

The true nature of chilblains is not understood, but it is evident that in this condition there is a vaso motor disturbance of a patchy character. Any method of congesting the parts should give relief. The author formerly produced Bier's hyperæmia by applying a few turns of a 2½ in rubber band just below the knee or elbow. Relief results when this is worn for twenty four hours.

After reading McClure's article on the treatment of chronic ulcer by direct elastic pressure, Mitchell applied this principle to chilblains. The results were excellent. Thin pieces of rubber of the weight of medium rubber gloves are used in strips of tubing ¾ to 1 in wide. These are applied over the affected parts and can be worn on the leg even during walking.

In the treatment of the hands, firm fitting rubber gloves are worn at night only. The condition is relieved instantly. After a few days the part is normal except for slight desquamation. If the skin is broken, boracic powder and a sterile dressing should be applied under the rubber band.

MARCUS H. HOBART, M D

Judin S S Illo Abdominal Amputation in a Case of Sarcoma Recovery Pregnancy and Birth of a Living Child *Surg Gynec & Obst* 1926 xlii, 668

In the case reported spinal anæsthesia was induced with 2 c cm of 5 per cent novocain. In illo abdominal amputation, great care should be taken not to injure the site of insertion of the rectus abdominis and the corpora cavernosa of the penis or clitoris which if cut, may cause a very severe hæmorrhage.

If the tumor has not reached the edge of the sacrum it is necessary to cut the ilium from the sciatic notch upward instead of severing the pelvis in the synchondrosis. In order to keep the trauma minimal a wire file should be used for this purpose instead of a chisel and hammer. The cutting of the sacral nerve plexus causes a severe shock. This can be prevented or at least diminished by injecting 10 per cent novocain into the bared roots before the section is done.

JOSEPH K. NARAT, M D

Blair Bell W Liverpool Cancer Research Organization The Nature of Malignant Neoplasia and Treatment of the Disease with Lead *Brit M J* 1926 11 919

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Cunningham L The Clinical Effects of Lead in the Treatment of Malignant Disease *Brit M J* 1926 11 931

Blair Bell W Some of the Views and Work of the Liverpool Cancer Research Organization *Brit M J* 1926 11 934

BLAIR BELL states that he has organized his cancer research into a systematized and departmentalized investigation under university auspices and that it includes physicochemical, biochemical, pharmacological, histological, and clinical studies of the properties of lead and its effect upon animals and malignant tumors.

The starting point was the toxic action of lead on the chorion, producing lead abortion, and the analogy between the chorion, an embryonic cell and the malignant cell. As the two cells are similar, it was believed that lead would be toxic to malignant neoplastic tissues.

LEWIS discusses the physicochemical character of malignant neoplasms. Cancerous tissues freshly removed from the body have a higher electrical conductivity than normal tissues. This increased conductivity necessarily means increased permeability which is a definite characteristic of malignant tissue.

In a study of the substances concerned in the maintenance of permeability it was found that in actively growing malignant tissues the calcium content is low. A high calcium content tends toward the formation of an emulsion of water suspended in a fat emulsion which has scarcely any conductivity and permeability. When the calcium content is low, the water predominates, fat droplets are suspended in it and the conductivity and permeability are high. Hence, when calcium is deficient high conductivity and permeability are to be expected.

Lecithin is an emulsifying agent which favors the formation and maintenance of an emulsion in which the oil is dispersed in water, a mixture of high permeability. Cholesterol favors the reverse type of mixture with a low permeability. Malignant tissues and chorionic villi have a relatively higher content of lecithin than of cholesterol.

In a study of the blood, no noteworthy change in the hydrogen ion concentration of the whole blood of patients with cancer was found, but the blood from a chicken's wing which was the site of a sarcoma, contained no more lactic acid than the blood from the opposite wing.

Enzyme activities have also been investigated. Increased permeability is favorable to the transport of enzymes and their products and should favor tissue digestion. Glycolysis the conversion of carbohydrates into lactic acid is the only cell process in which cancerous tissue diverges from normal tissue. While this process is generally characteristic of growing tissues it is the predominant cell process in malignant tissue. It yields more energy than is yielded by proteolysis or lipolysis.

The most outstanding characteristic of malignant growths and of the chorion is their capacity to infiltrate neighboring tissues. The collagen fibers of the connective tissue show imbibition and greatly increased numbers of elastic fibers due to hydrolytic decomposition of the collagen. The only reagent which causes changes in collagen analogous to those caused by malignancy is lactic acid. The glycolysis predominant in malignant tissues produces considerable lactic acid. This diffuses into the connective tissue below causing the changes which favor infiltration.

DILLING states that lead has a specific toxic effect on embryonic and rapidly growing tissues. Lead colic is due to the local action of lead on the musculature of the bowel peripheral to the nervous system. Lead constipation is produced by small amounts of lead which decrease the movements of the intestinal musculature. The resulting sluggishness permits greater absorption of water and inspissation of the intestinal contents.

Colics are produced by larger amounts of lead which are probably released from storage in the tissues by increased hydrogen ion concentration in the blood.

Lead has a similar effect upon the uterine musculature. Small doses weaken the muscular tonus and larger doses cause powerful contractions. Lead abortions are due chiefly to the action of the lead on the musculature but also to its toxic action on the embryonic cells.

WOOD reports that when white rats with carcinoma are given sublethal injections of lead the tumor first becomes intensely congested and later oedematous as the result of the thrombosis of a number of the vessels within it. Necrosis then ensues. In a few instances there is final absorption but as a rule recurrence takes place. The effect of such injections is due chiefly to thrombosis and only secondarily to the direct toxic action of the lead on the tumor cells. It cannot be assumed that extensive thromboses are so frequent in man but the pain which follows lead treatment in clinical cases may be due to more limited thromboses.

In animal tumors colloidal lead in sublethal doses produces profound changes which in a small percentage of cases lead to a permanent cure. However the dose necessary causes serious though not irreparable changes in the liver and blood forming organs. The lead is removed rapidly from the circulation being absorbed by and therefore damaging the capillary endothelium chiefly in the

tumor. Thrombosis occurs only in the tumor. The lead thus fixed in the neoplasm exerts its toxic effect on the neoplastic tissues.

GLYNN states that colloidal lead causes abortion by causing coagulation necrosis of the trophoblast. This necrosis develops within two or three days after its administration. Necrosis occurs also in animal tumors within two or three days. Patients with malignant disease complain of pain in the region of the neoplasm within a few hours after the intravenous injection of the lead. The pain may continue for three or four days. There is swelling for two or three days followed by rapid diminution which is most marked in the first ten days.

For the determination of the effect of lead on cancerous tissue the tissue must be examined within the first two or three weeks following the injection since after that length of time the regressive changes common to all malignancies occur.

In a case of ulcerating cancer of the breast the cancer cells disappeared following lead treatment. In other cases of cancer there was histological evidence that the lead had increased the regressive changes which usually occur in malignant neoplasms. In a case of adenocarcinoma of the ovary it so checked the rate of growth of the neoplasm that when the tumor recurred in the pelvis it was more differentiated (pseudo mucinous cystadenoma).

In a case of breast cancer in which death resulted from sepsis the lead treatment caused remarkable regression (spindle oat shaped phantom cells pyknosis etc.) in metastases in the liver lungs and suprarenals but a supraclavicular node that had undergone fibrosis still showed active cancer cells the fibrosis having acted as a barrier to the action of the lead.

CUNYNGHAM emphasizes the importance of a careful selection of cases of malignant disease for lead treatment. The presence of gross pathological lesions in one or more organs severe cachexia and personal idiosyncrasies are contra indications. Some persons are rendered extremely ill by the injections while others are unaffected by large doses of lead.

All of the toxic effects of lead have been noted—various forms of anemia lead changes in the red blood cells constipation gastro intestinal colic and occasionally peripheral nervous system and mental intoxications. The kidneys and liver suffer most from the treatment. Albuminuria occurs in 23 per cent of the cases. Renal disease is a contra indication to the treatment. Liver intoxication is manifested by headache nausea vomiting and a slight icteric tinge due to excessive bile pigment production which is followed by deeper jaundice with bile in the urine (damage to the polygonal cells) and finally by cholangitis with large amounts of bile in the urine. The hepatic changes are similar to those caused by phosphorus poisoning.

Most of the more serious toxic effects can now be avoided. The kidneys are spared by giving a diet of light low protein food with 2 or 3 pts of fluids daily. The anemia may be combated with iron

arsenite and blood transfusions. Glucose and insulin and saline solution are administered to check the vomiting, and morphine is given for the colic. Six tenths of a gram of lead is given intravenously in divided doses of 15 to 20 c cm of a 0.5 per cent solution at intervals of ten days with a month of resting time. The dose is still empirical. In cases of slowly growing tumors, the initial doses are smaller.

Of 277 patients treated with lead, fifty are believed to have been cured. In the other cases the treatment failed although in many there were significant retrogressive changes in the growth such as oedema and lobulation. Surgery and the X rays are used when indicated. Cunningham reports several interesting cases. A woman who had a fungating cancer of the breast was still alive five years after the lead treatment, and since the treatment had nursed two babies at the affected breast. A sarcoma of the small bowel, an adenocarcinoma of the liver and an adenocarcinoma of the uterus were completely arrested by lead treatment alone. In cases in which an incomplete operation had been performed (resection of the rectum with incomplete removal of the mass, gastro enterostomy for gastric cancer), the lead treatment held the remaining neoplastic tissue in check.

While the lead treatment now given has definite results, there is need of a more therapeutically active preparation of lead with less toxicity.

BLAIR BELL states that the chorionic epithelium is normally malignant in that it has the power of eroding the blood vessels and other maternal tissues, of cellular multiplication, and of metastasis. He has long believed that the cancer cell is a reversion, a de-differentiation, of the somatic body cell to the type of the chorionic epithelium. The undifferentiated character of malignant cells has been noted generally, but the fact that this is purposeful and a return to the ancestral type and that the adaptation is forced by metabolic disturbances has not been emphasized. If chorionic epithelium and neoplastic tissue are

alike, they should resemble each other morphologically, chemically, physicochemically and functionally, and in their toxicological affinities.

It is evident that the more malignant a tumor the more syncytial the arrangement of the cancer cells. Malignant cells are more permeable (an essential of growth and multiplication) than normal cells. The normal resting cell has no glycolytic power but a high respiratory (oxidation) function. The cancer cell and the chorionic epithelium have a high glycolytic power.

If normal body tissues which have no glycolytic power, be first starved of oxygen for a considerable time, they will take on glycolytic action after the manner of the cancer cell. The metabolic disturbance which initiates the cancerous change may be oxygen starvation. If this is true, malignant neoplasia is a state induced by oxygen starvation supervening on injury to the cell itself or the neighboring blood supply. In the absence of oxygen, the injured cell, like the chorionic epithelium, must have the power of obtaining energy by glycolysis in order to live.

It is probable that the great majority of foreign substances are toxic to living cells and when given in excessive doses will cause injury of the endothelium of the blood vessels, destroy the liver cells and affect the kidney tubules. In smaller doses each foreign substance may have a special and independent action. Lead, for example, has specifically a stunting effect on growing tissues. The toxicological affinities of chorion and cancer should be the same.

This is the rationale of lead abortion and the use of lead in the treatment of malignant tumors. The analogy between the chorionic epithelium and the malignant cell is supported by the clinical results of the lead treatment of cancer. As yet Blair Bell does not desire to give the lead suspension to the medical profession in general because it is toxic; its results are uncertain and if it is used indiscriminately it may soon be brought into disrepute.

HARRY C. SALTZSTEIN, M.D.



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NOTE—THE BOLD FACE FIGURES IN BRACKETS AT THE RIGHT OF A REFERENCE INDICATE THE PAGE OF THIS ISSUE ON WHICH AN ABSTRACT OF THE ARTICLE REFERRED TO MAY BE FOUND

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## EDITOR'S COMMENT

HOLMES comprehensive discussion of the functions of the pituitary gland and the experimental and clinical results of pathological conditions involving the gland (p 474), and Dott's study of pituitary disorders with particular reference to their surgical treatment (p 472) form an admirable summary of present day knowledge of the hypophysis. Both writers emphasize the increasing emphasis that is being placed upon the hypothalamus and other portions of the brain adjacent to the hypophysis as the essential areas concerned in the production of certain so called pituitary symptoms.

Nordmann's review of the development of the surgery of the colon during the past twenty five years (p 497) and the discussion following it bring out a number of divergent views particularly with reference to the most satisfactory method of entero anastomosis, the treatment of colitis and the development and treatment of megacolon. With regard to methods of anastomosis, Melzner cites experimental evidence and von Beck clinical evidence in favor of an end-to-end anastomosis as advocated by Nordmann, Kausch, Keysser and Finsterer; on the other hand, employ a lateral anastomosis but emphasize the necessity of leaving as small a blind sac as possible. In the discussion emphasis is laid upon the advantage of multiple stage operations in serious cases and the primary formation of a caecostomy or colostomy if symptoms of ileus are present.

A number of other particularly interesting papers on various phases of abdominal surgery from French and Italian clinics are reviewed in the section of this month's issue devoted to abdominal surgery. Perrotti's experimental study of the fate of free and pedunculated flaps of omentum used to cover intestinal incisions (p 494) shows the importance of preserving the

blood supply of such flaps if scar tissue formation and subsequent adhesions are to be avoided. Delore, Mallet-Guy and Burlet's report of the late results of resection of the stomach for cancer (p 492) add some definite statistics to the literature of gastric carcinoma upon which the surgeon may base a conception of the prognosis of surgical treatment.

Cornioley's discussion of mesenteric cysts with a report of two cases (p 488), and Berard and Mallet-Guy's account of a patient presenting symptoms of biliary lithiasis as a result of stenosis of the pancreatic portion of the common duct (p 504) suggest the necessity of keeping in mind these unusual conditions in establishing a differential diagnosis in the presence of abdominal pathology.

Rowntree's discussion on recent contributions to our knowledge of diseases of the kidney and liver (p 517) and Wilder's study of diabetes associated with hyperthyroidism and with myxoedema (p 469) emphasize the advances that are being made in the study of normal and disordered function in these particular fields and their repercussion on the entire field of medical and surgical therapy.

Hartmann's (p 510) and Ahlstrom's (p 510) discussion of the treatment of non-tuberculous adnexal affections, Berard's report of two cases of cancer of the tongue successfully treated by surgery and radium (pp 467, 468), Robertson's experimental study of acute haematogenous osteomyelitis (p 529), Hager's review of the clinical picture and the results of treatment in fifty cases of alkaline incrustated cystitis (p 521), and Jepson's description of the experimental production of ischaemic contracture (p 531) are a few of many other abstracts in this month's issue deserving of special attention.

# INTERNATIONAL ABSTRACT OF SURGERY

JUNE 1927

## ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

### HEAD

Melchior E. The Treatment of Furuncle of the Face (Zur Therapie der Gesichtsfurunkel) *Beitr klin Chir* 1926 cxxxv 681

With regard to the treatment of furuncle of the face there is considerable difference of opinion. Extreme partisans of strictly conservative treatment are opposed by the partisans of operation in every case. The author reviews the literature on the subject.

Besides the cervical congestion of Bier and suction hyperæmia other conservative measures have been recently advocated, viz the injection of autogenous blood encircling the infected area as done by Laewen, the serum therapy of Riedel, injections of carbolic acid, the vaccine treatment of Cruca and the roentgen irradiation method proposed by Heidenhain.

The overvaluation of conservative measures is explained by the fact that the clinical character of facial furuncle is extremely varied and that the so called benign forms are more common than the malignant forms. There is a preponderance of cases which Trendelenburg describes as 'entirely innocent'.

The presence of a very pronounced collateral oedematous swelling is not a sure criterion of malignancy. Edema of the eyelid and chemosis do not necessarily indicate thrombosis of the cavernous sinus. A line of redness and swelling leading to the angle of the eye is not always a sign of thrombophlebitis of the angular vein. 'Only severe involvement of the general health, especially high fever which even in the beginning, is never absent and is frequently associated with chills, offers an indication of malignancy of the process'.

Because of the difficulty in differentiating between malignant and benign furuncle of the face from the behavior of the local process, conclusions based on statistics as to the value of the different therapeutic methods are often erroneous.

Anatomically the malignant form of facial furuncle is a progressive phlegmon made up of very small isolated abscesses—a carbuncle. This tendency toward a carbuncle character is due to the rigid fixation of the skin of the face to the mimetic musculature (Rosenbach), by reason of which infectious material is easily pressed into the tissue spaces and the blood stream. The rich vascularization of the region favors the development of infectious thrombophlebitis. A fatal outcome is favored also by mechanical irritation produced by the patient such as squeezing or pricking of the area and the scratching off of scabs.

Incision is done (1) to abort the process at the outset, (2) to evacuate the collection of pus, or (3) to prevent the spread of a carbuncle. Incision made to abort the process in its early stages is futile as it relieves the tension only in its immediate vicinity and does not prevent the further progress of the condition. In a case of carbuncle with fluid pus the question as to whether incision should be done or the spontaneous rupture of the abscess awaited is not of much practical importance. An objection made by partisans of conservative treatment to incision in cases of progressive phlegmonous carbuncle is that the opening up of the vessels and tissue spaces may have an unfavorable effect upon the course of the disease. This objection is not valid.

The outflowing blood carries out with it the infectious material, and it is hardly probable that under such circumstances infectious material could be sucked into the blood vessels.

The failure of the incision of a malignant furuncle of the lip to stop the process is due to the fact that an extensive general bacterial invasion has already occurred and the rendering of the primary lesion innocuous no longer will have any influence upon the course of the disease. In such cases the patient dies, not because of the operative procedure but in spite of it. Any conservative treatment would fail also. Incision has an unfavorable effect only when

it is not done thoroughly enough. The judgment and technique of the surgeon determine the result.

With the patient under narcosis the author makes a cross incision and undermines the tissues parallel with the surface as far as healthy tissue. This gives a good cosmetic result as it renders the making of several parallel incisions unnecessary. A very sharp knife is used in order to prevent pressure on the surrounding tissues. The transverse incision at the inner angle of the eye is extended down to the bone cutting through the angular vein.

After the operation care is taken to prevent all external trauma the patient is kept in bed and immobilization of the mimetic musculature is obtained by prohibiting talking and chewing. In cases of furuncle of the lip showing a tendency to progress a proper incision is the surest means of preventing the further propagation of the condition. Operation is always indicated when chills and the local findings suggest thrombophlebitis.

In the period from 1909 to 1925 seventy three cases were treated at the Breslau Clinic. Thirty seven were treated by operation and thirty six conservatively. There were five deaths a mortality of about 7 per cent. Although four of the deaths occurred in the cases which were treated surgically it is erroneous to conclude from this that conservative measures are superior to operation as there were no very severe cases in the group treated conservatively and many of the cases treated by operation were cases in which conservative measures had failed. DISEHL (Z)

Ivy R H. Benign Bony Enlargement of the Condylar Process of the Mandible. *Am J Surg* 1927 lxxv 2.

Bony enlargements of the condylar process of the mandible present a definite clinical syndrome viz slowly progressive vertical elongation of one side of the face produced by lengthening of the ascending ramus of the mandible the chin being pushed over toward the opposite side failure of the upper and lower teeth on the affected side to meet and little or no interference with motion of the jaw. The disease has been classified as an osteoma exostosis hyperostosis hypertrophy an inflammatory process and overgrowth. Most of the recorded cases were successfully treated by excision of the enlarged condyle.

The author adds three cases to the seventeen found in the literature. MORRIS H. KAHN M D

Fitzwilliams D C L. Ranula. *Brit J Surg* 1927 xiv 472.

Ranula is a loose term which has no scientific meaning but has been applied to all cystic swellings of the floor of the mouth whatever their form or origin. Twenty-one cases from the literature are reviewed. The author concludes that a ranula may arise in the salivary glands including Blandin's gland, and in the mucous glands but nowhere else. He believes there is nothing to favor the view that

Fleishmann's bursa exists and nothing to connect a ranula with the persistence of a cervical sinus.

J. FRANK DOUGHTY M D

## EYE

Verrey A. Nagel's Anomaloscope. *Brit M J* 1926 ii 1103.

Nagel's anomaloscope permits a more exact diagnosis of color defects than lanterns and isochromatic tables. Three slits let in rays of light in such a manner that they are divided into their component parts by three prisms. Use is made of the green rays of one and the red rays of another to obtain pure green red or a combination of both. The mixture is matched with yellow let in by the third prism. With the second anomaloscope which is essentially a spectroscope a blue match can be made. Blue perception is rarely diminished in congenital dyschromatopsia. Macular blue blindness is found not only in retinal disorders but also in diseases of the optic nerve. VIRGIL WESTOTT M D

Khan W A. The Pathogenesis of Microphthalmia. *Brit J Ophth* 1926 x 623.

Khan reports four cases of microphthalmia showing different stages in the arrest of normal development. Deutschmann and Hess attribute the condition to intra uterine inflammation. The author believes that this may be the cause of colobomata of the iris and staphyloma but states that no pathological evidence of inflammation in microphthalmia has been reported. According to another theory the cause of microphthalmia is an arrest of normal development. Ochi produced the condition in twenty six experimental animals by causing a mechanical disturbance and by injecting salt solution and distilled water and air near the blastoderm. Consanguinity may also be a factor.

In one of the reported cases fright was the cause. Cessation of the menses usually corresponds to about the third week of gestation when the optic vesicles are being formed. It was at this time that the mother realized her condition and her nervous system was upset by the shock.

SAMUEL A. DURE M D

De Schweinitz G F. Essential Progressive Atrophy of the Iris. A Second Communication. *Arch Ophth* 1927 lvi 10.

De Schweinitz reports a case of progressive atrophy of the iris which he kept under observation for fourteen years. He reviews the reports of similar cases found in the literature and gives the theories which have been advanced regarding the etiology of the condition.

In their typical manifestations these atrophies are unilateral and slowly progressive and are ultimately associated with the development of glaucoma. Aberrations of the iris characterized by such conditions as polycoria bridge coloboma persistent pupillary membrane, etc., must not be mistaken for





irregularly with potassium iodide. Ulceration accompanied by difficulty in deglutition and pain irradiating to the ear began in July 1924. On December 30, 1924, the patient entered the author's service with an enormous ulceration of the anterior and right part of the tongue resting on an indurated surface. Biopsy showed the lesion to be a malpighian epithelioma. Radical resection was performed into normal tissue, the anterior two thirds of the tongue being removed. On February 2, 1925, a mask of felt containing 26 tubes with 6.8 mgm of radium was applied. This mask covered the carotid submaxillary and subclavicular regions on both sides and was left in place seven days. The dosage was 218 mc.

At the present time the patient is in excellent condition. All of the carotid region is supple and there is no trace of gland recurrence. The appearance of the stump of the tongue is also satisfactory. The patient has learned to speak and is able to swallow without difficulty. She has gained 6 or 7 kgm in weight.

AUDREY G. MORGAN, M.D.

**Bérard: The Late Result in Cancer of the Tongue Treated with Radium** (Résultat éloigné d'un cancer de la langue traité par curiethérapie). *Lyon chir.* 1926 **LXIII** 620.

The author has treated three patients for cancer of the tongue by radium therapy. All are apparently cured after two or three years.

In one case there was an ulcer at the base of the tongue on the right side involving the anterior pillar. Biopsy showed it to be a malpighian prickly cell epithelioma. Palpation did not reveal any enlargement of the submaxillary or carotid glands. On February 1, 1924, nineteen tubes of radium were applied in a mask of wax covering the mastoid and the submaxillary and carotid regions on the right side. This mask was left on for seven days giving a dose of 179 mc.

On May 9, 1924, eight radium needles were implanted in the periphery of the lingual tumor and left in place for eight days giving a dose of 14.64 mc. The patient is now in excellent general condition. Locally there is no trace of the neoplasm. Cicatrization is perfect, the base of the tongue and the anterior pillar are both normal. In the cervical region there are traces of a burn following radio dermatitis. Palpation does not show any gland enlargement.

AUDREY G. MORGAN, M.D.

**Fitzwilliams, D. C. L.: The Surgical Aspect of Carcinoma of the Tongue**. *Brit. M. J.* 1926 **II** 1089.

**Milligan, Sir W.: The Treatment of Carcinoma of the Tongue by Radiodiathermy**. *Brit. M. J.* 1926 **II** 1902.

**FITZWILLIAMS:** Of the utmost importance in the surgery of the tongue is the preliminary treatment of oral sepsis and the teaching of the patient how to swallow. The intrabuccal operation is suitable for every case in which there is no extension to the

floor of the mouth and no involvement of the lower jaw, the anterior pillar of the fauces, the tonsils or the palate. Ligation of the lingual artery in the neck is unnecessary and will soon be abandoned. The tongue should be removed first and then after healing has occurred a complete block dissection of the glands of the neck should be made.

The anesthesia is induced preferably by warmed ether administered by laryngostomy and preceded by atropine. The tongue is held with silk ligatures, the pharynx is plugged with a marine sponge and the incision is made through the mucosa leaving a margin of about  $\frac{3}{4}$  in. After separation and cutting of the geniohyoglossus, the styloglossus and the hyoglossus muscles, the lingual artery is located, ligated and divided. The growth is then removed and the wound toilet completed with care to leave no raw area. When this has been done warm Friar's balsam is painted on the stump and the stitch in the back of the tongue is fastened to the cheek.

The after treatment is directed toward rendering the patient as comfortable as possible. Morphine is withheld and the patient taught to irrigate the mouth with a warm potassium permanganate solution.

In the neck, the best results are obtained from a block dissection starting from under the chin and extending backward to the sternomastoid muscle, which is removed together with the internal jugular vein.

MILLIGAN'S article is summarized as follows:

1. Whenever possible immediate surgical removal of the primary growth and of the lymphatic field draining the focus of infection should be done.

2. When surgical intervention is deemed impracticable an attempt should be made to remove the growth with the diathermic knife or to destroy it by gradual coagulation with button or spike shaped electrodes.

3. When removal of the growth is contra-indicated the insertion of unscreened radium tubes into its substance should be done.

4. Combined treatment by means of diathermic coagulation and radium implantation at times gives gratifying results.

5. In early cases the lymphatic field upon the affected side and in advanced cases the lymphatic field upon both sides should be removed by a surgical operation.

6. Irradiation of the lymphatic field should be an invariable postoperative procedure and should be done preferably by the implantation of screened tubes or alternately by surface applications or X-ray therapy.

7. No preliminary irradiation should be employed if glandular deposits are to be removed by ordinary surgical procedures.

8. The diathermic cautery knife presents many advantages as compared with the scalpel for the removal of a cancerous tongue.

MANFORD R. WALTZ, M.D.

## PHARYNX

**Guthrie D. Acute Retropharyngeal Abscess in Childhood** *Brit M J*, 1926 ii 1174

Guthrie reports a series of twenty cases of retropharyngeal abscess in childhood. Most of the patients were under 1 year of age.

The most characteristic symptom is difficulty in breathing. In the early stage there is a croupy cough. The temperature is seldom very high and may even be normal. Digital examination is the most certain diagnostic test, but should not be practised unless one is prepared to care for the abscess in case it should be opened.

The abscess should be opened preferably without the use of an anæsthetic as soon as the diagnosis is made. Following free drainage, convalescence is uneventful.

JAMES C. BRASWELL M.D.

## NECK

**Hammitt F. S. Studies of the Thyroid Apparatus XXXVII. The Role of the Thyroid Apparatus in the Growth of the Thymus** *Endocrinology* 19 6 x 370

The normal course of thymus growth is still undetermined although there is a general belief that the gland undergoes a normal age involution independent of dietary and pathological influences.

By a series of experiments on the albino rat the author hopes to plot the normal curve of thymus growth. The conclusions drawn from these experiments to date are the following:

'A study of thymus growth in the albino rat under close and ideal conditions with respect to diet, environment and health shows that there is no such phenomenon as the age involution of the thymus up to the time of young adulthood, some time after puberty.

'The thymus does lose weight during puberty, and growth of the organ is resumed after the completion of the adjustment when the animals are under suitable conditions. Hence it is evident that puberty is not necessarily the initiator of a permanent progressive loss of weight or involution of the thymus. The pubertal loss of weight is simply a reaction to the general physiological disturbance of the period, and not to any specific relation of the thymus to gonadal secretory activity.

The thymus is affected much more adversely by both thyroid and parathyroid deficiency than is the body as a whole.

Thymic growth is retrogressive, i.e. weight is lost after thyroid or parathyroid removal at fifty days or thereafter.

'This is to be taken as an expression of an additive effect of the normal disturbing influence of the pubertal adjustment and the total disharmony induced by the glandular deficiencies. It is not an acceleration of involution.

'The distortion of thymus growth induced by thyroid and parathyroid deficiencies is best inter-

preted as a reaction to the general body disturbance. The evidence does not justify the assumption that the growth of the organ is specifically related to thyroid or parathyroid activity.'

DON K. HUTCHENS M.D.

**Wilder R. M. Hyperthyroidism Myxœdema and Diabetes** *Arch Int Med* 19 6 xxxviii 736

This is a study of thirty eight cases of frank diabetes combined with states of hyperthyroidism and of one case of diabetes associated with myxœdema. Diabetes occurs in about 11 per cent of cases of hyperthyroidism. Exophthalmic goiter is less frequently complicated by diabetes (0.6 per cent of cases) than adenomatous goiter with hyperthyroidism (2 per cent). The study is not concerned with alimentary glycosuria which is a much more common phenomenon in cases of hyperthyroidism and in the author's opinion does not represent any actual abnormality of carbohydrate metabolism as herein defined.

The symptoms of hyperthyroidism in a patient with diabetes may be obscured by those of diabetes. This is true particularly in cases with severe acidosis or diabetic coma. It is advisable therefore, to consider the possibility of hyperthyroidism in all cases of diabetic acidosis.

A mild and possibly inconspicuous diabetes may be fanned into flame by hyperthyroidism and severe hyperthyroidism (crisis) will readily provoke coma in a diabetic patient.

The requirement of insulin is increased by hyperthyroidism.

Iodine administered as compound solution in a dosage of from 20 to 60 minims daily to patients suffering from combined exophthalmic goiter and diabetes reduces the intensity of the diabetes. This effect parallels that upon the basal metabolic rate. Iodine has little or no influence on the course of diabetes associated with adenomatous goiter with hyperthyroidism and is without effect in cases of uncomplicated diabetes.

Thyroidectomy is almost always followed by a considerable gain in tolerance in diabetes complicated by hyperthyroidism. Sometimes this is so great as to suggest a cure of the diabetes, but the response to glucose test meals may still reveal the persistence of the diabetic tendency. A cure may be simulated also when a hypothyroid state is induced by the operation. A case of juvenile diabetes is cited to illustrate the palliative effect of myxœdema developing in diabetes. When the basal metabolic rate of this child was restored to normal the previous diabetic state returned.

Special precautions are necessary in operations on patients with diabetes complicated by hyperthyroidism. The period of exacerbated toxicity which so often follows thyroidectomy is extremely dangerous. There is also considerable danger of provoking hypoglycæmia in these patients since they may be peculiarly sensitive to overdoses of insulin. Hypoglycæmic coma is differentiated from

other conditions of collapse by the fact that it is usually attended by a striking elevation of the blood pressure

The phenomena exhibited by patients with diabetes combined with states of hyperthyroidism or hypothyroidism may be related to the general metabolic rate and thus may be explained without recourse to speculation as to a specific interdependence of the thyroid and pancreas. It appears that at lower metabolic rates the tissue cell is capable of utilizing a given amount of glucose with less insulin and that with higher metabolic rates the requirement of insulin is disproportionately increased

**Wahlberg J. Thyrotoxicosis and Its Reaction to Small Doses of Iodine (Das Thyreotoxischen Syndrom und seine Reaktion bei kleinen Joddosen)**  
*Leta med Scand* 1926 Supp xiv

Under the term thyrotoxicosis the author includes all thyroid disturbances from the high grade Basedow type to the borderline conditions resembling the simple neuroses

Treatment with small doses of iodine was given in twenty cases of different character and severity and the changes in the clinical picture the basal metabolic rate the pulse rate and the weight were noted. The author summarizes the results as follows

1 There is at first improvement which occurs the more quickly and definitely the more pronounced the intoxication. This is manifested by a fall in the basal metabolic rate of as much as 50 per cent a slowing of the pulse rate amounting to 40 beats a minute, recession of the exophthalmos cessation of the diarrhoea etc

2 When the treatment is continued there occurs a change for the worse which is more prompt and marked in the severe cases. In the severe cases the condition may become worse than at the beginning of the treatment

3 When the treatment is stopped there occurs an exacerbation which is more marked in the more severe cases and may be worse than the condition at the onset

Because of the last two facts iodine therapy in thyrotoxicosis is purely a palliative measure. The author recommends its use before and after operation as is done by Plummer but warns against its employment for curative purposes in severe thyrotoxicosis as in these it may cause great damage

MICHAEL L. MASON M D

**Moll H and Scott R A M. Gastric Secretion in Graves Disease.** *Lancet* 1927 cccii 68

Of fifty cases of hyperthyroidism in which the Rehfuess test was made twenty two showed achlorhydria. In only 60 per cent was the achlorhydria accounted for by duodenal regurgitation. The authors attribute the achlorhydria to a two fold mechanism (1) overaction of the vagus which hastens the passage of the gastric contents through the stomach and causes duodenal regurgitation, and

(2) a direct inhibitory action of the sympathetic on hydrochloric acid secretion

J FRANK DOUGHTY M D

**Schugt H P. Tuberculosis of the Larynx. Treatment by Surgical Intervention in the Superior and Inferior Laryngeal (Recurrent) Nerve. A Report Based on Seventy Nine Cases.** *Arch Otolaryngol* 1926 iv 479

The superior laryngeal nerve essentially the nerve of the larynx has played an important part in the treatment of tuberculosis of the larynx for a long time. The recurrent nerve has been considered in this connection only recently. An absolutely safe method of permanently overcoming pain on deglutition is resection of the superior laryngeal nerve. This is preferable to blocking of the nerve by alcohol injection which is uncertain in its results. It cannot be stated however that resection of the nerve has a direct favorable effect upon the healing of the tuberculous process

In the treatment of tuberculosis of the larynx complete immobilization may be secured by paralyzing the motor nerve of the larynx—the recurrent laryngeal nerve. The method of choice is the injection of alcohol. The technique is simple and the resulting paralysis lasts for from four to eight weeks. Both recurrent nerves should not be paralyzed simultaneously

Of fifteen cases of therapeutic paralysis of the recurrent laryngeal nerve the laryngeal condition was improved after the treatment in nine unimproved in three, and worse in two. In one case the treatment and duration of observation were insufficient for a conclusion. The therapeutic paralysis is especially beneficial in unilateral cases which have not advanced too far and the pulmonary condition is relatively favorable

SAMUEL KAHN M D

**Schwytzer A. Operative Relief of Laryngostenosis.** *Ann Surg* 1927 lxxix 40

SCHWYTZER reports a case of laryngostenosis in the treatment of which a special operative procedure was adopted

The patient a woman about 40 years of age had been treated for one year for asthma. The laryngoscope showed great destruction of the epiglottis the larynx looked like an ulcerating crater. It was impossible to see into the trachea the larynx having a very narrow and tortuous lumen and presenting on all sides a bulky thickening with an irregular ulcerated surface partly covered by a dirty looking material. A Wassermann test proved to be plus

Under salvarsan treatment a cicatricial stenosing change seemed to occur with the healing and was undoubtedly the cause of an increase in the severity of the dyspnoea. The appearance of the larynx however improved. On account of the dyspnoea operation was necessary

The thyroid cartilage was divided in a zigzag manner and the two sides of the thyroid cartilage were pulled apart until the tips of the corresponding

projections rested upon each other. These were then fastened by a silk suture so that their tips met firmly.

If the larynx is not severely stenosed and does not require an intralaryngeal operation, as for instance in asphyxia from paralysis of the posterior cricoarytenoid muscles, the mucosa need not be opened. The stenosis may be relieved by a comparatively simple operation and the indefinitely prolonged wearing of a tracheotomy cannula avoided. The described method of widening the larynx was satisfactory. In reality this is a laryngoplasty.

MORRIS H. KAHN, M.D.

**Grivot, Leroux and Causse.** Concurrent Development of an Epithelioma of a Vocal Cord and a Lymphosarcoma of the Base of the Tongue (Présentation d'un malade chez lequel évoluent simultanément un épithélioma épidermique d'une corde vocale et un lymphosarcome de la base de la langue) *Arch. internat. de laryngol.* 1926, xxvii 1118.

The patient whose case is reported, a man of 62 years, was examined in October, 1925, because of dysphonia of several months' duration. At that time a tumor which appeared to be a benign polyp was found on the left vocal cord. This was removed. Microscopic section showed it to be a malignant papilloma. In December, 1925, a piece of the vocal cord was removed and sectioned; examination revealed thickening of the epithelium in places with mitoses but no invasion in the depths of the cord. In January, 1926, the cord appeared practically normal except for slight reddening at the site of the previous growth, but at the base of the tongue there was an ulcer with moderate induration about it. Biopsy showed lymphoid sarcoma.

In February, 1926, the ulcer on the base of the tongue showed no change, but at the site of the

papilloma on the left vocal cord there was a small red nodule. The patient had received anti-syphilis treatment since the last examination in spite of a negative Wassermann reaction. Biopsy at this time showed the vocal cord to be normal, the nodule to be a malignant papilloma not invading the cord, and the lesion at the base of the tongue to be, as diagnosed before, a malignant lymphosarcoma.

Because of the clinically benign course of the condition and the patient's age and apparent resistance to these tumors, irradiation was regarded as preferable to operation.

MICHAEL L. MASON, M.D.

**Voorhoeve, N.** The Stomach as a Vicarious Air Container After Extirpation of the Larynx (Der Magen als vikarierender Luftkessel nach Larynxextirpation) *Acta radiol.* 1926, vii 48.

The author describes the X-ray findings in a case of oesophageal speech after extirpation of the larynx. In this case it was demonstrated that the stomach can perform the function of the lungs as an air chamber.

The stomach is filled with air, not by active swallowing, but by the aspiration caused by inspiratory movement. The air is expelled from the stomach by an expiratory movement in which the patient opens the cardia.

The manner in which the aspiratory and expulsive effect of the respiratory movement operates in the oesophagus and the stomach is explained.

The mechanism of spasmodic aerophagia by aspiration as described by Linossier necessitates the assumption that the oral part of the oesophagus and probably also the cardia are actively opened by the patient.

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS CRANIAL NERVES

**Bullock W O** Traumatic Pneumocephalus an Analysis and Report of a Case *Surg Gynec & Obs* 1926 xlm 730

The author reports a case of pneumocephalus and briefly reviews fifteen cases collected from the literature. His patient was a 60 year old man who was kicked in the head by a mule and was confined to bed for three weeks by severe headache. During the fourth week about a pint of clear fluid was discharged from his nose. Signs of increasing intracranial involvement then developed. Six weeks after the injury there were signs of involvement of the frontal lobes and at the base and X ray examination of the skull revealed a fracture of the right frontal region and a huge external pneumocephalus over the frontal lobes. As clear fluid escaped at intervals there was doubtless a communication with the nasal cavity.

An exploratory craniotomy was done. The patient died ten days later from meningitis (?). Autopsy was not permitted.

Bullock believes that if an X ray examination were made in all cases of head injury pneumocephalus would be found more frequently. The mechanism is probably the forcing in of air trauma or subsequent coughing or sneezing. In some cases the air has not appeared until later. There are three types of the pneumocephalus diffuse external pneumocephalus or aerocoele a cephalus (simple or combined) the brain subcircumscribed accumulation depend upon the stance. The course and outcome to infection disposition of the air and. Conservative treatment in addition to the brain's but if the escape of ment has given the help without much operative the air can be help.

ALBERT S CRAWFORD M D

**Dott N** Matment *Br M J* 1926 ii 1040

The Author discusses on Pituitary Disorders cal and Surgical Standpoint. Diagnostics of hypopituitarism showed other destructive agents acting. A study and with the single exception of that all twelfth cause hypopituitarism. The on the pituitary physiology of the pituitary the eosinophils attributed to each portion.

author discusses LOBE (PARTES NERVOSA AN AND TUBERALS)

THE functions of the posterior of uncertain. The action of the

is known till now

extract of the posterior lobe is well known but the powerful pharmacological effect of the extract proves nothing as to the normal physiological function of the lobe. The single proved function of which Dott is aware is the regulation of the pigment cells in certain amphibia which remain pale after the removal of the pituitary body but become black again upon the injection of the extract and remain black after successful grafting of the pars intermedia tissue. In the dog the total removal of the posterior lobe of the pituitary is attended by no apparent consequences. It appears quite unwarranted by known facts to attribute any definite symptom of pituitary disease to derangement of this structure.

### THE ANTERIOR LOBE (PARS DISTALIS)

With regard to the function of the anterior lobe we have much more definite information. Dott gives an interesting historical sketch of the experimental work leading up to this knowledge. Nothing resembling acromegaly has been produced by the experimental administration of anterior lobe a fact which raises a question as to whether the secretion of the eosinophilic tumor may be not only quantitatively but qualitatively abnormal.

### PITUITARY SYMPTOMS OF UNCERTAIN ORIGIN

Pituitary symptoms of uncertain origin include adiposity an inconstant though striking feature which is more common and conspicuous in the young than the old. A comparison of this adiposity with that following castration and the genital hypoplasia of pituitary insufficiency suggests that it may be an indirect effect produced through the intermediation of the genital glands. The cause may be the involvement by a tumor of the fat metabolism center in the hypothalamic region the existence of which has been demonstrated by recent experimental work.

Diabetes insipidus is an inconstant accompaniment of pituitary disease. It has been attributed to lesions of the posterior lobe of the gland and to lesions of the hypothalamus. A study of tumors indicates that it occurs only when the growth is large enough to indent the base of the brain and does not always occur even then. Experimental evidence favors the cerebral theory but it is difficult to ignore the fact that injections of extract of the posterior lobe will arrest the polyuria.

The diabetes mellitus of acromegaly is inconstant and may occur early or late in the condition. It may be extremely irregular and transient thereby differing from typical diabetes mellitus. It reacts to insulin. In the case of a patient who died in diabetic coma the islets of Langerhans showed sclerosis but it is difficult to associate an intermittent symptom with a sclerotic process.

Increased sugar tolerance has been observed in pituitary disorders, but may be found in any form of obesity with a lowered metabolism. Sugar in gestion tests are liable to lead to gross error.

#### PITUITARY DISORDERS IN RELATION TO DISTURBANCES OF ENDOCRINE FUNCTION

Dott describes the histology of the eosinophilic adenoma and the changes seen in acromegaly and gigantism. Of the many lesions which may exert a destructive effect on the gland and result in hypopituitarism, the chromophobe adenoma and the suprasellar cyst are the most common. The author describes these in some detail and reviews the findings in hypopituitarism. The mixed adenoma may cause signs of both hyperpituitarism and hypopituitarism in the same person. The histology of the tumor explains the definite syndromes. The tumor associated with the clinical signs of pathological hyperpituitarism is distinguished by eosinophilic cells and it is reasonable to assume that these cells are responsible. As these cells closely resemble normal anterior lobe cells their secretion may be assumed to resemble the normal anterior lobe hormone. No specific secretion would be expected from the chromophobe adenoma which represents the least specialized cell type and in which this cell usually attains only an embryonic phase.

#### LATENT HYPOPITUITARISM

Cases of latent hypopituitarism are a group with "pronounced neighborhood but inconspicuous glandular symptoms" (Cushing) which are recognized only from the effects of pressure upon the optic fibers. The condition occurs in persons over 40 years of age. This is easily explained by the fact that cutaneous changes and depression of sexual function are the only constant signs of hypopituitarism, and adiposity does not occur in later life. The changes therefore excite no notice in advancing age.

#### ADENOCARCINOMA OF THE PITUITARY GLAND

Adenocarcinoma of the pituitary gland is extremely rare. The few cases known to the author were those of patients over 45 years of age. The growth tends to invade the cranial bones and extend between them and the dura, causing progressive involvement of the cranial nerves. The dura seems to form a barrier against intracranial invasion, but the growth may produce metastases in the liver and elsewhere.

#### PITUITARY DISORDERS FROM THE ANATOMICAL AND SURGICAL STANDPOINT

From the anatomical and surgical standpoint, three main groups of pituitary disorders may be distinguished.

1 Tumors of intrasellar origin. By the time tumors of intrasellar origin cause symptoms, they have usually passed beyond the limits of the sella. These tumors are pituitary adenomata, the most common pituitary lesion. The author describes

their growth and their effects on the sixth, fifth and third nerves, the optic fibers and the hypothalamus, and the results of obliteration of the third ventricle with hydrocephalus and pressure upon the inner surface of the temporal pole with olfactory hallucinations. Even a tumor of moderate size will surround the carotid arteries and insinuate itself between the layers of the basal dura. When this has occurred, the complete operative removal of the tumor is impossible.

2 Tumors of suprasellar origin. Tumors of suprasellar origin arise from or near the roof of the sella and enlarge primarily in the cisterna chiasmatis, although by the time they cause symptoms they have usually encroached on the sella and its contents by pressing the roof down from above. In their upward growth they usually pass behind the chiasm and toward the third ventricle and the interpeduncular space. They differ from the intrasellar tumors not only in their origin but also in their relation to the subarachnoid space and the sequence in which they encounter the various structures upon which they press and the direction in which they exert pressure. Hypothalamic symptoms may occur early, and the field changes may differ as the pressure often comes from above and behind the chiasm. The X-ray picture of the sella differs, instead of the distention characteristic of pressure from within such as occurs in cases of adenoma, there is a flattening by pressure from above with erosion of the posterior clinoid processes.

3 General pressure causing hypopituitarism. In long standing cases of increased intracranial pressure the sella may be flattened and it is not surprising that signs of hypopituitarism are often present as in cases of hydrocephalus secondary to midbrain tumor or chronic adhesive meningitis. The author has seen pituitary signs so marked in such cases as to suggest primary pituitary disease.

The differential diagnosis between pituitary lesions of these three types is nearly always possible. It is of the utmost importance as the operative treatment differs radically and an incorrect approach may be not only inadequate but very dangerous. Adenomata are rare before the fifteenth year of age and uncommon before the twentieth year, whereas suprasellar cysts are frequently encountered in young children and the vast majority manifest themselves before the thirtieth year. Other aids in the diagnosis are the chronology of the symptoms, the character of the field defects and the X-ray findings. The even ballooning of the intrasellar adenoma is characteristic and in marked contrast to the isolated erosion of the clinoid processes and the calcification of the suprasellar cyst. In the presence of general intracranial pressure there is not only erosion of the clinoids and the dorsum sella but also pressure atrophy of other portions of the base or vault. It is not easy to distinguish between a suprasellar cyst or tumor without calcification and a cerebellar lesion with hydrocephalus but ventriculography may help.

## TREATMENT

The treatment of conditions related to the pituitary gland includes surgery, irradiation and glandular therapy.

**Surgery** The indications for surgery are fairly clear. Amelioration of glandular disturbances following operation has been reported in only a very few cases and as such disturbances are seldom of very serious inconvenience to the patient they do not constitute an indication for operation at the present time. On the other hand the persistence of severe headache and progressive loss of vision demand operative measures. In cases with these symptoms it is important that surgery be undertaken reasonably early when the risk is least and benefit to vision is assured. Operation should be strongly urged for cases in which the visual field or acuity are steadily decreasing and for cases of any severity in which improvement is not occurring spontaneously. The surgical aspect of the adenoma is considered. The author prefers the transphenoidal approach and describes the technique. He approaches the suprasellar tumor from above. Subtemporal decompression plays a very unimportant role in pituitary surgery.

**Irradiation** Deep irradiation has a powerful destructive effect on the neoplastic cells of adenomata but not on other tumors of this region so far as is known. Caution must be exercised in employing it as a primary treatment. In two cases cited it was followed by such reactive swelling in the tumors that the pressure symptoms became acutely aggravated and immediate sellar decompression was necessary. In early visual cases the irradiation may be tried without a preliminary operation but when the optic fibers are seriously compressed it should not be employed until a transphenoidal operation has been done. As a postoperative adjunct irradiation is very valuable and undoubtedly hastens improvement. Radium introduced by means of an endonasal applicator has been used by some but the results are not known to be any better than those obtained with the X-ray and a number of complications such as necrosis of the adjacent bone have been reported.

**Medical treatment** Diabetes insipidus may be relieved by the administration of extract of the posterior lobe. This is given as an intranasal spray once or twice a day. Incidental pyrexia and lumbar puncture may occasionally cause temporary cessation of the polyuria and thirst.

The administration of anterior lobe and whole gland by various means has been extensively employed in clinical cases of hypopituitarism but a review of the literature is by no means convincing as to its efficacy. However a sure foundation is being laid in the experimental laboratory where definite amelioration of the symptoms of hypopituitarism has been obtained in mammals from intraperitoneal injections of large doses of anterior lobe substance. While the active principle has not yet been isolated and suitable means for its administration to human

subjects have not yet been developed there is no doubt that before long such means will be at our disposal.

GILBERT C. ANDERSON M.D.

### Holmes G. Discussion on Pituitary Disorders Disturbances of Growth of Sexual Functions and of Metabolism *Brit M J* 1926 II 1035

The pituitary body is a complex structure composed of several distinct parts of different origin and function. All or one or more of the parts may be involved by disease. Recent investigations have raised doubt with regard to generally accepted hypotheses regarding the physiology of the pituitary body. The normal functions of the pituitary are so closely related to those of other glands especially the sex glands that a distinction of symptoms produced by disease of one of these glands is difficult.

It is generally believed that the pituitary body has an influence on growth sexual development bodily activity and metabolism these separate functions depending upon different parts. A hormone of the cells of the anterior lobe stimulates the growth of bones and influences the development of the skin and certain viscera. The pars intermedia and the posterior lobe control the development of the sex organs. The posterior lobe influences also the metabolism of carbohydrates. The pars tuberalis which lies upon the infundibulum is probably concerned with the secretion of urine.

The pituitary body may be disturbed by many types of disease. Primary tumor is probably the most common but the gland may be involved also by metastatic growths. It may be injured by the pressure of growths in contiguous parts the pressure of hydrocephalus by syphilis and by encephalitis. Extrapituitary conditions may block the secretion from the posterior lobe which enters the cerebrospinal circulation through the third ventricle or interrupt the nervous connections between the pituitary body and the hypothalamus. Defective development may result from congenital or mechanical causes or regressive changes.

Changes in the size and function of the pituitary gland may be associated with conditions of other endocrine organs such as those occurring in pregnancy following castration and atrophy of the sex glands and in disease of the thyroid.

The clinical syndromes of pituitary conditions are usually divided into hypopituitarism and hyperpituitarism. This is probably the most useful classification at present although it has not been proved that the secretions of the cells of an adenoma are identical with the normal. Many clinical symptoms are due to dyspituitarism or overactivity of some part of the gland and underactivity of some other part.

### DISTURBANCES OF GROWTH

The most common disturbance of growth is acromegaly. This is generally associated with an adenoma of the anterior lobe of the pituitary. Although in a few cases no tumor or enlargement is to

be found, it is possible that in such cases there is a similar growth or over function of an accessory pituitary. Benda has shown that the characteristic lesion in acromegaly is an adenoma which deviates so little from the normal structure that its secretion may be assumed to be similar. As a direct result of the increased secretion or possibly in combination with changes in other endocrine glands the well known body changes occur, the skin becomes thick and inelastic, and the nose, lips and tongue enlarge. Enlargements of the heart, liver, pancreas, and kidneys have been described, but are of no pathological significance. The colon has been found enlarged to two or three times the normal, this possibly accounting for the severe constipation with periodical enormous evacuations which occurred in those cases.

**Gigantism.** In pituitary disease in early life a general increase in height and bulk may be the most prominent feature. The growth may continue beyond adolescence. The normal proportions of the body may be maintained or the limbs may be abnormally long. The sex glands and the secondary sex characteristics may be underdeveloped. There are other factors predisposing to gigantism but in some giants the pituitary is undoubtedly at fault, some overactivity of the anterior lobe providing the stimulus to skeletal growth possibly before fusion of the epiphyses. As an increase in the size of the anterior lobe is known to follow the removal of the testes or ovaries, it is possible that the large stature of eunuchs may be related to pituitary activity. Gigantism is not acromegaly in early life but true acromegaly in children has been reported. The two conditions are closely related however, as many giants develop symptoms of acromegaly in later life and acromegaly generally occurs in persons of large build. Similar regressive changes occur in the two conditions. In both the patient is quite strong at first but later experiences a progressive weakness which may go on to cachexia. In both conditions the sexual functions are depressed and the patient shows apathy, indolence, a lack of energy and interest, and a narrowing of the emotional life. The giant is usually more infantile in his outlook.

**Dwarfism and infantilism.** Experimental evidence and clinical observation have indicated that lesions of the anterior lobe of the pituitary body in the young may cause an arrest of physical development. Such a lesion in childhood or early adolescence may result in dwarfism or an arrest of development with conservation of the normal adult proportions, or in infantilism in which growth is not necessarily stunted but the morphological characters of infancy and absence of sexual development persist beyond the age of puberty. True pituitary dwarfism is not common. Persons with this condition are merely miniature adults with fairly well developed sex glands and a normal hair growth. The author reports two cases having features suggesting supra-pituitary growths. In one a calcified tumor was shown by the roentgenogram and the patient became blind following bilateral temporal hemianopsia. These

cases generally show signs of premature senility in the third decade. Infantilism is more common. In this condition the stature may not be short, but the general development is slender and the configuration of the body is child like, the sex organs are infantile, and the secondary sex characteristics are not developed. Obesity is a prominent feature.

#### ADIPOSITY

Experimental injury of the pituitary and especially of the posterior lobe may lead to an abnormal deposit of fat in the subcutaneous tissues and the viscera. A similar condition may accompany any pituitary lesion which injures the posterior lobe. It is seen in acromegaly, gigantism, dwarfism and especially in the Froehlich syndrome. Extra-pituitary lesions causing dysfunction may cause the same picture. Cushing originally attributed it to a defect of the posterior lobe but recent work suggests that it may not be the direct effect of the pituitary lesion but due to damage of adjoining centers in the base of the brain or the genital atrophy that usually accompanies pituitary disease. In a recent case of hypopituitarism seen by the author a rapid and marked increase in weight was lost following the implantation of a testicular graft.

#### SKIN

The skin changes accompanying adiposity are characteristic but occur also in cases without obesity in which atrophy or non development of the genital organs is the chief feature. The skin is usually soft, thin and smooth often practically hairless, and as a rule dry though rarely scaly. In young subjects its color is generally good but in middle life it becomes thin and wrinkled resembling the skin of old age. Rapid destruction of the entire pituitary body is associated with emaciation, somnolence, amenorrhœa in women, polyuria, atrophy of the sex glands, anemia, slowness of the pulse and respiration, increasing muscular weakness, atrophy of the skin, and in some cases loss of hair and teeth.

#### DISTURBANCES OF SEXUAL FUNCTION

As a rule sexual activity is depressed or lost in all forms of pituitary disease. This is frequently the first symptom. In certain cases of acromegaly however, there may be an early stage of overactivity. The state of the sexual organs varies with the age at which the condition begins. If it begins before puberty, the sexual organs remain undeveloped, whereas if it begins after puberty the sexual organs may retain their normal size though frequently atrophy and regressive changes occur and there is loss of all manifestations of sexual function, including desire.

#### METABOLIC DISTURBANCES

Glycosuria is a variable symptom of pituitary disease and can be controlled by insulin. The carbohydrate tolerance is increased. The basal metabolic rate varies with the activity of the gland,



being low in hypopituitarism and high in hyperpituitarism. Polyuria and the clinical manifestations of diabetes insipidus have been attributed to disease of the posterior lobe of the gland but recent investigations indicate that they are due to the hypothalamus even though their temporary relief by the injection of extract of the posterior lobe suggests that the posterior lobe plays a part. In cases of tumor the blood pressure is generally decreased. Somnolence is a common sign of pituitary disease. The patient has a tendency to drop off to sleep in the day but can be easily awakened. The somnolence is not to be confused with the stuporous condition associated with brain tumor or other disease causing an increase of the intracranial pressure. It is probably not a direct pituitary sign as recent observations have demonstrated in the region of the third ventricle the existence of a center which controls or regulates sleep and this region may be pressed upon by tumors of the pituitary gland.

#### PRESSURE SYMPTOMS

In most pituitary diseases the primary lesion is a tumor capable of exerting compression on surrounding structures and thus producing other symptoms. Headache is variable. In some advanced cases it is absent while in others it is one of the earliest and most prominent symptoms. When the tumor is within the sella the headache is probably due to pressure upon the dural lining and is referred to the temples in such cases it is a dull aching or severe bursting pain which is often continuous for hours or days. When the tumor is outside of the sella or extends from the sella the headache is more severe but less constant due to increased intracranial pressure and generally referred to the forehead or behind the eyes. It may be very intense in the morning and accompanied by cerebral vomiting.

#### VISUAL SYMPTOMS

Visual symptoms are common but vary with the position of the tumor the direction of its growth and the various anatomical relations of the parts involved. Upward pressure generally first involves the optic fibers from each nasal half of the retina. In other cases the nerves are longer and the chiasm more posterior so that one or the other nerve is involved first more rarely the chiasm is placed anterior to the sella when one of the optic tracts may be affected first. A pure bitemporal hemianopsia is rare as the decussating fibers seldom suffer alone and they are all affected only when the tumor has reached a considerable size. The earliest field defect is usually one upper temporal quadrant. This defect gradually extends toward the macula and invades the lower temporal quadrant. The opposite eye may be affected simultaneously or later.

In another common type a scotoma at first partial but gradually becoming larger is found on the temporal side of the fixation point. This gradually extends into the upper temporal quadrant and may invade the nasal side to some extent. In other

cases there may be a gradual and general increasing contraction of the peripheral temporal field or merely a progressive diminution of vision throughout the whole temporal field. When the chiasm is more posterior the pressure first affects one optic nerve a diminution of the central vision often rapidly progresses to blindness of the eye, increasing pressure produces a temporal hemianopsia on the opposite side or the nerve is compressed so that central vision suffers. If the chiasm is anterior a homonymous hemianopsia to the opposite side may result but this is uncommon. In association with the loss of vision the disks generally show a progressive pallor but they may retain their normal color for a considerable time after the occurrence of the field defects. Papilloedema is rarely seen in cases of simple pituitary tumors.

#### OCULAR PALSIES

Diplopia strabismus and ptosis are not uncommon. One or all of the muscles supplied by the third nerve may be weak. The external rectus is commonly weak but the fourth nerve generally remains unaffected. It has been stated that ocular palsies occur only when the tumor has extended intracranially or lies outside of the sella. While they are more common under such conditions the author believes that they occur with intrasellar growths which may bulge lateralward and compress the nerves.

#### TRIGEMINAL PAIN

Trigeminal pain or numbness accompanied by sensory defects may occur but probably does not when the tumor lies in the sella. Its presence is indicative of extrasellar extension or an extrasellar lesion.

#### ANOSMIA

Anosmia is rare but may occur when an extrasellar neoplasm presses the olfactory tracts or the area olfactoria.

#### CEREBRAL SYMPTOMS

Cerebral symptoms are surprisingly rare in view of the amount of compression which may occur. There may be a mild hemiplegia. This is indicated only by an extensor plantar reflex due to compression of a cerebral peduncle and therefore is associated with extrasellar tumors. Damage to the mesial aspect of the temporal lobe may produce uncinate attacks.

#### THE PITUITARY AND THE HYPOTHALAMUS

It has been shown that in the hypothalamus there exist centers which under experimental conditions at least can affect the activity of the sympathetic system also that this region is concerned with the regulation of temperature and metabolism the secretion of urine the control of sleep and the function of the sex glands. Erdheim first suggested that disturbance of the hypothalamus is the cause

of many of the symptoms attributed to the pituitary gland, and this theory has been supported by clinical and experimental evidence. Several physiologists hold that the pituitary is not essential to life and that its complete removal may not be followed by characteristic symptoms. It seems definitely established that polyuria and temporary glycosuria may be produced by lesions of the tuber cinereum, and some claim that adiposity and regressive changes in the sex glands may result from injury to the base of the brain when the pituitary gland remains intact.

Numerous clinical cases reported within the last few years tend to substantiate these experimental findings. It may be that the 'pituitary' symptoms resulting from lesions of the brain are the result of blocking of the pituitary secretions which normally reach the cerebrospinal fluid through the infundibulum. It seems, however, that certain clinical syndromes must be correlated with pituitary disease. Evidence of acromegaly may precede evidence of pressure upon the brain and is clearly associated with an overgrowth of the anterior lobe. It seems also that functional and anatomical sexual changes are of pituitary origin. Many of the less marked sexual disturbances may be the result of a disturbance of pituitary function.

#### TREATMENT

When the most prominent symptoms are of a hypopituitary nature the most rational treatment is the administration of the active substance of the gland. In some cases of adiposity the administration of thyroid has resulted in at least subjective improvement and in cases of large adenomata it has repeatedly improved vision and reduced the headache. There is no convincing evidence that suprarenal testicular or ovarian preparations have any effect when they are administered by mouth. When the most urgent symptoms are due to pressure surgery or irradiation is necessary. Unfortunately many cases reach the surgeon only when the tumor is quite large or has burst into the intracranial cavity. When this has occurred only temporary relief of pressure can be expected. The author favors the fronto-temporal approach.

Striking results have been reported also from X-ray treatment. Irradiation is claimed to be free from danger. This may be true so far as life is concerned, but the author knows of cases in which it has been followed by an increase of blindness and other pressure symptoms. Nevertheless, he believes that the method deserves a further trial especially in the cases of patients who are poor surgical risks.

GILBERT C. ANDERSON M.D.

**Bérard and Dunet: Meningioblastoma Treated by Deep Roentgen Therapy (Meningioblastome traité par la radiothérapie profonde).** *Lyon chir* 1926 xxi: 621.

In February, 1924, the authors reported two cases of hemicraniosis, a hyperostosis of the bones of the skull secondary to a tumor of the meninges. In one

of these cases the disease began in 1920 with tumor of the left frontoparietal region. The first physician consulted gave an intensive specific treatment which had no effect. There was a rapid decrease in vision with the development of very marked exophthalmos and violent headaches. A diagnosis of osteosarcoma was made and the patient sent to the cancer station for roentgen treatment.

Roentgenography showed a tumor occupying the upper, external and postero-external walls of the left orbit. The left frontal and sphenoidal sinuses were intact. During October, 1923, the patient was given roentgen treatments, one in the left lateral region of the orbit, one below the orbit, and one above the orbit. A slight roentgen dermatitis developed but disappeared in six months. At the end of six months most of the symptoms had begun to decrease the headache and dizziness had ceased, the temporoparietal swelling had decreased (it never disappeared entirely) and there was marked improvement in vision. The patient is now able to sew and read a little with the left eye with which, for several years, she had not been able to do more than distinguish between light and darkness. The exophthalmos was not very much improved.

AUDREY G. MORGAN M.D.

**Tavernier, L.: Paradoxical Results Immediately After Operations for Facial Paralysis (A propos des résultats paradoxaux immédiats après les opérations pour paralysie faciale).** *Bull et mém Soc nat de chir*, 1926 lvi: 99.

A soldier with complete racial paralysis from a mastoid bullet wound suffered from conjunctival irritation due to inability to close the eyelids. The wound was well healed. As the loss of facial nerve substance in the wound prevented local repair, Tavernier anastomosed the facial with the hypoglossal nerve.

The incision extended from in front of the sternocleidomastoid to the retroauricular furrow and the great horn of the hyoid. The facial nerve was sectioned near the stylomastoid foramen. The hypoglossal was easily found without any freeing of the neurovascular cord at the point where it crosses the internal carotid. The hypoglossal was unsheathed and a bundle equal to about two thirds of the nerve trunk was cut, reversed upward, and sutured to the peripheral end of the facial nerve by a very fine linen thread.

The patient noticed closure of the eyelid as soon as he awoke from the anesthesia. The eyelid could not be shut voluntarily nor by attempts at contraction of the face, but when the eye looked downward the lid fell, giving the impression of a passive fall from simple relaxation of the levator palpebrae. The eyelid on the affected side closed gently but involuntarily after the eyelid of the other eye. Before the operation the lids were never closed even in sleep.

The operation did not modify the paralysis of the remainder of the facial nerve distribution. Closure

of the eyelid permitted healing of the conjunctivitis. The result has persisted for seven years since the operation. The hypoglossal facial anastomosis immediately modified the state of the eyelid muscles although no regeneration of the facial nerve occurred.

Tavernier attributes the phenomenon not to the suture of the hypoglossal and facial nerves nor to the section of the facial which was already severed several millimeters higher but to some action on the sympathetic fibers in the operative field. The superior sympathetic cervical ganglion was not involved. The pericarotid plexus was touched only in an extremely superficial way because the hypoglossal was located and unsheathed easily without a search. There was a greater chance of an effect on the sympathetic fibers accompanying the stylo mastoid artery because isolation of the facial nerve with the surrounding vessels was difficult.

Botreau Roussel has reported immediate recovery of movements in facial paralysis after removal of the superior cervical sympathetic ganglion.

WALTER C BURKET M D

### PERIPHERAL NERVES

**Jacobovici and Baumgartner. The Technique of Phrenicotomy and Resection of the First Rib in the Surgical Treatment of Pulmonary Tuberculosis** (La technique de la phrénicotomie et de la résection de la première côte dans le traitement chirurgical de la tuberculose pulmonaire). *Bull et mém Soc nat de chir* 1926 lvi 994.

In the procedure described the supraclavicular region is well exposed and the thorax elevated with the scapula free the shoulder depressed the head in extension and the face turned toward the opposite side. A U shaped incision is made from the acromioclavicular articulation along the external half of the clavicle and along the posterior border of the sternomastoid to the level of the hyoid bone. After the superficial cervical fascia is broken through and the middle together with the omohyoid is divided the brachial plexus and scaleni are exposed. This permits recognition of the phrenic nerve and the first rib.

The phrenic nerve including its roots and anastomoses is dissected. Jacobovici believes that for complete hemidiaphragmatic paralysis all of the anastomoses and especially the anastomosis to the subclavian nerve must be destroyed and he sections them at the time of exposure. Baumgartner however considers that dissection of the anastomoses is unnecessary and only prolongs the anesthesia and operation unduly since evulsion of the nerve for a distance of 15 cm must destroy them.

In resection of the first rib Jacobovici protects the trunks of the brachial plexus by retracting them. The insertion of the underlying scalenus muscle is ranged free. A portion about 4 cm long (from the costotransverse ligament behind to the crossing with the clavicle in front) is laid bare. Complete

isolation of the rib requires care especially to avoid injuring the venous plexus posteriorly and the pleural dome within. The rib is cut as near as possible to the costotransverse articulation and lifted up and a portion about 4 cm long is resected. In resection of the rib further anteriorly there is danger of injury to the subclavian artery.

After rib resection and partial repair of the musculo aponeurotic layers the two roots of the phrenic are divided and the nerve is avulsed according to the classical procedure. The operation is accomplished without bleeding. Jacobovici postpones nerve avulsion to the end of the operation in order that at the moment of avulsion when accidents may occur the patient will not be profoundly anesthetized.

Phrenicectomy is of value in tuberculosis of the base or apex of the lung to place the lung at rest and to facilitate the collapse of a cavity. If the cavity is kept gaping by peripheral adhesions the ascension of the diaphragm permits some degree of collapse of the cavity walls but the release of an apical adhesion and effacement of the lung apex by resection of the first rib greatly improves the therapeutic result.

Therapeutic thoracoplasty (Sauerbruch) prepares for collapse of the diseased lung decreases the severity of the accidents associated with extensive rib resection and lessens the total strain thrown on the opposite lung. Total thoracoplasty requires resection of the first rib. As this is difficult by the posterior route its accomplishment during preliminary phrenicectomy renders the secondary thoracoplasty easier and more efficacious.

Phrenicectomy combined with rib resection through one incision is of value in grave forms of pulmonary tuberculosis in which surgical intervention must be minimal.

In a case of tuberculosis in which thoracoplasty was contra indicated by the evolution of the disease Berard performed a phrenicectomy and short parasternal resections of the three upper ribs through one incision.

WALTER C BURKET M D

**Delagénère II. Reparative Surgery of the Peripheral Nerves** (Chirurgie réparatrice des nerfs périphériques). *Paris chir* 1926 lviii 163.

Delagénère has done 144 nerve sutures with 124 completely successful results sixteen partially successful results (almost all in mixed nerves) and four failures. In general the sooner the suturing is done after the accident the more rapid the repair and the return of physiological function. However it is never too late to restore a nerve. Delagénère has had completely successful results in cases operated upon twenty eight months after the accident.

Generally the repair is slower after complete anatomical section than after physiological interruption from crushing. Motor nerves regenerate more quickly than mixed nerves.

The differentiation between anatomical section and physiological interruption is sometimes impossible. In such cases it is better to wait for three or four months to determine whether physiological function will not be restored. If the wound is recent it may be a question of revivification rather than of section but if the wound is old there will be a nodule on each end of the nerve and quite extensive resection may sometimes be necessary.

As great economy as possible should be exercised in resection to avoid difficulty in suturing but the resection must be carried into normal nerve tissue. Particularly in mixed nerves care must be taken to unite each fasciculus of the central end to the corresponding one of the peripheral end. Sometimes a small vessel will be seen on the surface which will serve as a guide. The author uses very fine needles and fine silk for suture taking care to pass the threads only through the sheath and not through nerve substance. The two ends should be brought only into contact without overriding. The sutures must be non absorbable and strong enough to keep the ends in contact during the process of repair. This may be aided by immobilization of the limb.

If the resection is extensive enough so that the ends cannot be brought together easily flexion of the limb may help but if there is much of a gap it is better to resect a piece of bone or suture in two stages leaving a long enough piece of cicatricial tissue to fill the gap and resecting it at a second operation after it has had time to serve as a guide to growing nerve fibers. If nerve grafting is necessary to fill the gap, autografts are to be preferred. It is possible to fill a gap of as much as 13 cm. in a mixed peripheral nerve with a double fragment of musculocutaneous nerve from the leg of the patient with perfect functional results.

The author sees no advantage in enveloping the nerve in tubes of aponeurosis or various other materials. This procedure is not only useless but interferes with the success of the suture. The only useful precaution is the placing of the sutured nerve in healthy muscle tissue, preferably an interstice in the muscle. Drainage is not necessary unless a bone callus has been opened in the liberation of the nerve. The skin is sutured with horsehair and if necessary the limb put in plaster to limit its movements to the desired degree. A nerve suture does not cause any pain after the operation. If the limb has been placed in flexion to safeguard the suture the flexion should be maintained for fifteen days or preferably a month. When the plaster has been removed the patient should be allowed to recover his movements gradually without massage or electricity. In a comparative study of series of cases the author found that electricity does not help in the regeneration of the nerve.

He finds that simple liberation of the nerve from scar tissue is rarely effective. In 113 nerve liberations he performed during the war the results were not nearly so good as those of resection and suture.

AUDREY G. MORGAN M.D.

## SYPHATHETIC NERVES

**Gabrielle and Rouquier** *Periarterial Sympathectomy of the Brachial Artery for Severe Raynaud's Disease with Cyanotic Oedema of the Hand and Phlyctenules of the Fingers Recovery* (Sympathectomie p'ariartérielle humérale pour maladie de Raynaud a forme grave avec oedeme cyanotique de la main et phlyctene des doigts guérison) *Lyon chir* 1926 **xviii** 638

The patient whose case is reported was a soldier 21 years of age who had had symptoms of Raynaud's disease for years. He stated that his hands ears and nose had always been extremely sensitive to cold. Recently the disturbance had rendered his left hand useless. Both the palm and back of the hand were swollen and hard so that no indentation could be made. The skin was violet colored. On the dorsal surface of the two last phalanges of the index and middle fingers there were little zones of necrosis of the epidermis.

The fingers as well as the hand were infiltrated. Active movements of the fingers were impossible and movement of the wrist was impaired. There was no sensation in the hand. Sensation became normal 3 or 4 cm. above the radiocarpal joint. The left hand was cold and there was a considerable difference in the temperature of the right and left hands. The radial pulse was normal on both sides. The patient was in an almost constant condition of neurovegetative disequilibrium the slightest peripheral stimulation caused considerable variations in maximum and minimum pressure.

Sympathectomy of the left brachial artery was performed from the origin of the superior profunda to the elbow. The artery was denuded as completely as possible. The vessel became filiform and almost immediately the color of the back of the hand changed from violet to a rose color and the local temperature rose considerably. When the patient was put to bed his hand was warm and after forty eight hours the oedema had disappeared completely and movement and sensation were normal. Arterial tension was practically the same on both sides though possibly a little decreased on the left side. The immediate result is excellent, but as the patient is still sensitive to changes in temperature, and particularly to cold some reserve is necessary in the prognosis as to the end result.

AUDREY G. MORGAN M.D.

## MISCELLANEOUS

**Guleke** *The Clinical Aspects of Neurinoma* (Zur Klinik des Neurinoms) 50 Tag d. deutsch. Ges. f. Chir. Berlin 1916

The term 'neurinoma' is applied to a peculiar form of tumor having its origin in nerve tissue. Its pathogenesis and position among neoplasms are still matters of considerable controversy among pathologists.

The author reviews the clinical aspects of neurinoma on the basis of the sixty cases reported in the

literature to date and a series of cases that he himself has had the opportunity to study.

Neurinomata may be divided into three groups. Those of Group 1 have their origin in the brain. The author has had five cases in which the tumor occurred in the cortex and base of the cerebrum, one case in which it occurred on the parietal lobe and four cases in which it involved the acoustic. The symptoms of the cerebral neurinomata were the same as those produced by other brain tumors.

Neurinomata of Group 2 occur within the spinal canal or close to the vertebral column. The author has observed two cases of intradural tumors. In these the tumor was in close relationship to the posterior roots of the spinal cord showing a predilection for these structures as compared with the anterior roots and from this site grew laterally along side the transverse processes so that in the roentgen picture it appeared as an hourglass shaped tumor in the mediastinum. In two other cases the tumor was close to the cervical vertebrae originating in the fourth cervical vertebra and growing laterally.

Neurinomata belonging to Group 3 occur in the peripheral nerves. In one of the cases reviewed a tumor the size of a walnut occurred in the sciatic nerve and in its growth separated the fibers of the nerve. In another case the tumor had its origin in the peroneus nerve.

The symptoms are as varied as the locations of the tumors. Two thirds of all neurinomata are found at the points of exit of the nerves. The growth of neurinomata originating from the posterior roots of the spinal column occurs through the intervertebral foramina thus explaining the characteristic hourglass shape of these neoplasms.

In spite of the variation in the symptoms a neurinoma may be recognized as such from its location. Anatomically, however, it is very difficult to differentiate from neurofibroma and under certain conditions from sarcoma. This is true especially because the larger neurinomata tend to develop cysts in their centers and, like neurofibromata (Recklinghausen's disease), neurinomata may be multiple. The same tumor may show neuroinomatous, neurofibromatous and sarcomatous areas.

In general neurinomata are to be regarded as benign. If there is any suspicion of sarcoma the treatment must be radical but it should be borne in mind that intradural sarcomata are usually benign. In cases of hourglass tumors, the operation should be begun as a laminectomy and continued laterally. In cases of acoustic tumors the operation should be performed in one stage and should not be interrupted if in the course of its removal, the tumor is discovered to be sarcomatous.

In the discussion of this report BORCHARDT (Berlin) stated that he had seen nine cases of neurinoma in three of which the tumor had its origin in the central nervous system. In cases of acoustic tumor he has been using a less radical procedure than was formerly advocated and has thereby improved the prognosis. He called attention to the possibility of the changing of a neurinoma into a neurofibroma or sarcoma. In cases of tumor arising from the peripheral nerve the surgeon must decide whether the tumor should be merely shelled out of the nerve substance or resected with the nerve. About 12 per cent of neurinomata undergo malignant degeneration.

STEINER (Z)

# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Braine J F C, and Massie, C Carcinoma Mammæ The Results of Treatment Guy's Hosp Rep Lond 1926 LVII, 484

The data upon which the conclusions in this article are based were obtained from the study of 722 cases of cancer of the breast which were treated during the thirteen year period from 1909 to 1922. The authors' purpose was primarily to determine the results of surgical treatment.

Of eighteen patients not operated upon, seventeen lived thirty one months after the appearance of the tumor. Of 704 patients subjected to operation, twenty three died shortly after the operation. Of the 254 patients who died, seventeen had a partial removal of the breast and survived for an average of fifty three months, sixty six had an incomplete removal and survived for an average of forty six months, and 171 had a complete removal and survived for an average of thirty one months. The authors conclude that in late cases in which there is little possibility of eradicating the disease entirely, the less extensive the operation the longer the patient's survival.

The histological study of the tissue offers little or no aid in the prognosis. Glandular invasion, however, is of considerable significance. Of the patients with involvement of the glands, 45.8 per cent survived for three years and 18.8 per cent for five years. Of those without glandular involvement, 86 per cent survived for three years and 46 per cent for five years.

Of the 338 verified cases, 195 showed metastasis. In 103, the metastases occurred in the skin or a scar in eighty six in glands in twenty three, in bones and in sixty two, at other sites.

"That more than half of the total number of recurrences should occur in the scar and surrounding skin is surprising and points to an inadequate removal of the superficial tissues at the time of operation."

Of the patients subjected to immediate or prophylactic irradiation, 66 per cent were alive at the end of three years and 31 per cent at the end of five years, while of those not so treated, 50 per cent were alive at the end of three years and 27.3 per cent at the end of five years after the operation.

The chest wall and axilla were divided into five areas and each area was irradiated three times a week for six months or longer. The voltage used was 75 kv, and the skin target distance 20 cm. A 5 oz lead skin filter was employed. This superficial irradiation applied immediately after the operation has definitely improved the prognosis.

PAUL W. SWEET, M.D.

Borak J Postoperative Irradiation of Breast Cancer Radiology 1926 VII 471

Postoperative irradiation of breast cancer has been used to a limited extent at the Holzkecht clinic by giving comparatively small doses at intervals over a considerable period of time. The results indicate that it is of definite value. According to investigations made with reference to the cases in which postoperative irradiation was carried out during the years 1919 and 1920, the results have been as follows:

Of twenty six patients receiving postoperative irradiation in 1919, nine (34 per cent) were still living and free from recurrence in 1926, more than six years after the operation. Of the thirty seven patients so treated in 1920, seventeen (46 per cent) were well after the lapse of five years. Therefore of the total number of sixty three patients, twenty six (42 per cent) were still living and free from recurrences and metastases after from five to six and a half years. Six patients (10 per cent) had died without any recognizable recurrence of the cancer. The remainder could not be traced.

On comparing the operative results as shown by statistics collected from European and American literature, which reveal an average of 35 per cent of patients living for three years and 25 per cent living for five years without a recurrence, it is evident that the postoperative irradiations brought about an improvement in the results of the radical operation.

The number of cures that can be effected by operation in cases of movable tumor confined to the breast without involvement of the axillary glands is so considerable provided the operation is radically done that it is *a priori* improbable that the number would be increased to any appreciable extent by postoperative irradiation.

Postoperative irradiation probably has its greatest field of usefulness in cases which come to operation when the tumor is adherent to the overlying skin and there may be involvement of the axillary glands. In these the operative results are greatly in need of improvement and irradiation has improved them. The results reported from different clinics are cited.

Cases with involvement of the supra clavicular glands cannot be regarded as particularly suitable for radical operation. They should therefore be considered inoperable and treated only with the roentgen rays or after an operation that falls short of being radical, should be subjected at first to intensive roentgenization and later to irradiations gradually diminishing in intensity. In any event, the technique for irradiations that is eminently successful for patients undergoing a radical operation

in the second stage does not appear to be so effective in patients who have reached the third stage

ADOLPH HARTUNG, M D

### TRACHEA, LUNGS AND PLEURA

Lemon W S Bronchiectasis in Childhood *Med Clin N Am* 1926 v 531

Between the years 1920 and 1926 15 500 children under 14 years of age were examined at the Mayo Clinic and a diagnosis of bronchiectasis was made in the cases of sixty three Fifty nine of the cases of bronchiectasis constitute the basis of this report

The etiological factor was the intrinsic damage due to inflammatory insult Cases due to stenosis and infection from foreign bodies in the bronchus were not included In no instance was the cause an extrinsic effect such as stenosis from the pressure of a malignant growth aneurism gumma or lymphomatous disease

Twenty seven patients were males The youngest was 17 months old and the oldest 13 years The most common precursors of the bronchiectasis were whooping cough measles and disease of the upper respiratory tract including colds bronchitis lobar pneumonia and bronchopneumonia The relationship of disease of the nose throat and accessory sinuses was carefully studied Bronchiectasis appeared as a primary disease in fully as many cases as sinusitis In forty six cases in which the records were complete it seemed that sinusitis was either the cause or the result of the bronchiectasis

In most cases the symptoms were cough expectoration haemorrhage and asthenia The cough was variable and the character of the sputum depended largely on the pathological changes in the lungs The most important observation was the frequency of hemorrhage 14 per cent of the patients having had more or less bleeding This percentage is smaller than in adults with the disease It was found that hemorrhage might precede the other symptoms of bronchiectasis by many months Hemorrhage is much more common in bronchiectasis than in tuberculosis The most common complications were disease of the upper respiratory tract pneumonia pleurisy empyema and its complications and abscess Abscess of the lung was the least common In one case it acted as the cause of the bronchiectasis but in two others was the sequel of the existing chronic suppuration By a study of the nail fold capillaries an attempt was made to discover the cause of the clubbing of the distal phalanges This however proved fruitless The roentgenological data showed that in 70 per cent of the cases either definite or suggestive findings corresponded to the clinical signs indicating the degree of damage and the progress of the case

The general health height and weight of the patients were below normal and the pulse and temperature usually above normal The haemoglobin and erythrocytes were within normal limits but the leucocyte count was invariably high

Smith D T Experimental Aspiratory Abscess *Arch Surg* 1927 xiv 231

Smith produced pulmonary abscesses in mice guinea pigs and rabbits by the intratracheal inoculation of material scraped from the alveolar border of the teeth of patients suffering from moderately severe pyorrhea

The same morphological types of organisms were recovered from these experimental abscesses as were found in both postoperative and non-operative pulmonary abscesses in man

The author concludes that the aspiration of infected material from the teeth and tonsils probably accounts for the greater number of cases of pulmonary abscess but a small number may result from infected emboli from the upper respiratory passages

JOHN J MALONEY M D

Dujarier C Hydatid Cyst of the Left Lung Extirpation Closure without Drainage Recovery (*Kyste hydatique du poumon gauche extirpation Fermeture sans drainage guérison*) *Bull et mém Soc nat de chir* 1926 li 1220

In a case of hydatid cyst of the left lung physical and X ray examination revealed an encapsulated accumulation of fluid Exploratory puncture was followed by a severe anaphylactic reaction with syncope a urticarial eruption arthritic pain and pleuritis

Operation was performed under general anesthesia The pleura was incised and the cyst in the lung exposed The contents of the cyst were evacuated the sac was dissected out and the cavity closed Recovery was complicated by a febrile course and the development of a pneumo hydrothorax which required puncture Healing finally took place and a subsequent X ray examination showed only a light lemon sized shadow marking the site of the pocket from which the cyst had been removed

LEO M ZIMMERMAN M D

Sherman J Primary Carcinoma of the Lung *California & West Med* 1927 xxi 40

Metastases in the mediastinum from extrathoracic carcinoma are not rare but primary carcinoma of the lungs is uncommon In a study of the symptoms produced by the latter condition the author reviewed over 600 cases He reports two cases in detail

Early diagnosis is difficult because the symptoms produced by the carcinoma closely simulate those produced by tuberculosis influenza and cardiorenal cardiac and other conditions

Primary pulmonary carcinoma may arise from (1) the epithelial lining of the bronchial mucosa (2) the mucous glands or (3) the epithelium lining the alveoli Ewing classifies the alveolar type into (1) the diffuse and (2) the nodular

The symptoms are discussed in detail No sign diagnostic of the condition in its incipency has been noted The later stages are associated with hoarseness and laryngeal cough produced by paralysis of the recurrent laryngeal nerve The condition is

recognized earlier by bronchoscopy than by X ray examination. The treatment suggested is crutertization, which is the one method by which the pain may be relieved. Radium and the X rays are of no avail.

PAUL W. SWEET, M.D.

### Jackson B. H. The X Ray Diagnosis of Empyema

*Atlantic M J* 1926, xxv, 135

### Jackson C. The Bronchoscope as an Aid in the Diagnosis and Treatment of Pulmonary Infections

*Atlantic M J*, 1916, vi, 139

### Butler E. F. The Surgical Management of Empyema

*Atlantic M J* 1916, vi, 142

B. H. JACKSON describes the normal appearance of the thorax and its contents, discusses the differential diagnosis of chest lesions as shown by the X ray, and explains the upward curve of the fluid line in partial effusions.

It is impossible to make a diagnosis of empyema by X ray methods alone. Fluid can be demonstrated in the pleural cavity roentgenologically but purulent, serous, sanguineous and serofibrinous pleuritic effusions cannot be differentiated.

A diagnosis should never be made at once from fluoroscopy alone. The roentgenological findings must always be considered with all other clinical data obtainable. The clinician and roentgenologist should work in conjunction and correlate their findings.

C. JACKSON summarizes the advantages of bronchoscopy in pulmonary infections as follows:

1. The interior of the lung may be inspected safely.

2. The orifice of the bronchus leading to any one of the five lobes can be quickly identified and any abnormality in the lumen, mucosa, or secretions thereof can be determined.

3. Any departure from the normal in the secretions, the mucosa, the lumen, or the form and movement of the bronchial walls can be noted with all the certainty of direct vision.

4. Obstructing masses of secretion can be removed and the subjacent bronchi, fistulae or cavities explored.

5. Specimens of tissue and uncontaminated specimens of secretions can be removed with precision.

6. The presence or absence of lesions can be determined not merely with regard to the right or left lung but with the utmost precision of localization as to lobes and, except in infants, to portions of lobes.

7. Pneumonograms furnishing accurate, localized, and graphic data of the utmost diagnostic value can be made of any particular region. Bronchoscopic inspection reveals the pathological area into which bismuth subcarbonate or lipiodol are to be introduced. If obstruction is present it can be dealt with bronchoscopically so that the distal region can be reached with the opaque material.

8. In diagnosis not only the direct information but also the indirect information yielded by the bronchoscope is helpful.

9. All of the diagnostic information mentioned may be obtained in the case of any patient whose mouth can be opened.

10. Anesthesia is unnecessary, but in the cases of adults local anesthesia may be induced if desired. Diagnostic bronchoscopy in pulmonary abscess, bronchiectasis, and tuberculosis is discussed together with its indications and contra indications.

The bronchoscopic treatment of lung suppuration following tonsillectomy, residual suppuration, empyema, bronchial stenosis, benign growths of the lung and malignant disease of the lung is described.

BUTLER, discussing the surgical treatment of empyema, deals more with the fundamental principles than with special technical points.

The effect exerted by drainage operations on vital capacity depends upon the presence or absence of adhesions between the visceral and parietal layers of pleura. Of great importance is the fact that the pleura reacts differently to the various organisms which are commonly encountered in post-pneumonic empyema.

The danger to life demands conservatism in the initial approach, but when once this risk begins to decrease two other risks loom large, that of chronicity and that of recurrence. Conservatism does not meet the requirements here, radicalism is more effective.

Irrigation with antiseptics and continuous suction are valuable procedures, one bringing chemical aid and the other mechanical aid. However, the problem is surgical. Obliteration of the cavity may become necessary.

In conclusion, Butler says it is necessary to study each case of empyema as an individual problem, to discover the etiological factors, the responsible organism and the site of the cavity, and to know all that can be learned about pleural adhesions. When the danger to life is great, the surgeon should be cautious but as this risk decreases he should become bold.

CARL R. STEINKE, M.D.

## HEART AND PERICARDIUM

### Pribram. The Operative Treatment of Mitral Stenosis

(Operative Behandlung der Mitralstenose) 50 Tag d. deutsch. Ges. f. Chir. Berlin, 1926

Pribram reports the case of a 38-year-old woman who, twenty-three years previously, suffered an attack of articular rheumatism and thereafter developed symptoms of mitral stenosis. Kraus, whom the patient consulted first, was of the opinion that there was no possibility of improvement under medical treatment and that the prognosis was hopeless. The patient therefore concluded to submit to operation.

The operation was performed under ether anesthesia. A longitudinal incision was made over the sternum with resection of the costal cartilages. The sternum was divided in the midline down to the xiphoid process and the two sections were separated



and held apart. The mediastinal pleura was pushed out of the field. A slight tear which occurred was immediately repaired by suture. The pericardium was then split and the left ventricle fixed by two anchoring sutures. The punch like instrument was then introduced into the left ventricle through the muscular wall which closed about its rounded stem and allowed hardly any bleeding. Guided by the fingers the instrument was then brought up against the stenotic tissue of the mitral valve and a hole was punched through. The instrument was then immediately withdrawn the wound in the heart closed and the external wound sutured.

A change in the heart was noted at once. The stenosis was changed into an insufficiency. A pre systolic murmur began. The blood pressure which had been previously very low (90) rose to 150. The general condition was good. On the third day fever began. By the fifth day the temperature had risen to 40 degrees C. and on the sixth day the patient died. Autopsy revealed as the cause of death an aortic endocarditis. There was no sign of a recent endocarditic process on the mitral valve.

This case demonstrates that the operation described may be performed successfully but should be undertaken only when there is no possibility of an endocarditic process.

In the discussion of this report KOERTE stated that he doubted whether any benefit was to be derived from the changing of a stenosis into an insufficiency. Pribram replied that in his opinion the prognosis of insufficiency is more favorable than that of stenosis.

SCHOENBALER reported that in a recent trip to America he had the opportunity to see four cardiac operations. Of the four patients only one, a girl of 16 years survived. He believes that patients with aortic stenosis are more favorable subjects for the operation than those with mitral stenosis. In mitral stenosis the musculature of the left ventricle upon which is thrown the increased burden created by the insufficiency is atrophic and it is questionable whether in the majority of cases it will respond to the new requirements. In aortic stenosis on the other hand the musculature is hypertrophic and will therefore respond more easily to increased demands upon it. STETTNER (Z)

## ESOPHAGUS AND MEDIASTINUM

(Ierf I II Foreign Bodies in the Esophagus  
*Ann Otol Rhinol & Laryngol* 19 6 xxxv 1000

The author reports cases illustrating the chief points in the etiology, symptomatology, diagnosis, and treatment of foreign body in the esophagus.

A history of coughing gagging or choking when an object was held in the mouth is always suggestive of foreign body, especially in the cases of children playing on the floor.

A negative roentgenological opinion of opaque foreign body in the alimentary canal cannot be given unless the studies include the entire food tract

from the nasopharynx to and including the tuberosities of the ischium. After the removal of one object, multiplicity of foreign bodies should be ruled out by roentgenography.

The regurgitation caused by a foreign body in the esophagus is frequently regarded as vomiting and often leads to a diagnosis of gastric disturbance.

Non opaque foreign bodies can be diagnosed roentgenologically only after the injection of opaque material. Such injections should be made whenever the symptoms are suggestive and the first roentgenograms are negative.

Difficulty in swallowing is the most common symptom of esophageal disease.

The passage of a bougie into the stomach does not rule out foreign body in the esophagus.

Inability to swallow saliva and the presence of pyriform sinuses filled with secretion indicate complete esophageal stenosis.

Pain may be produced by the impaction of a large object in the esophagus, penetration of the esophageal wall or secondary inflammation. It cannot be relied upon to localize the obstruction.

Esophageal foreign bodies may not only interfere with swallowing, but also because of their shape, size or nature may give rise to signs and symptoms referable to the air passages. In one of the author's cases dyspnea was an alarming symptom.

When tacks or other small foreign bodies lodge in the esophagus, penetration of the esophageal wall usually occurs with a variable degree of periesophageal infection.

The prolonged sojourn in the esophagus of large irregularly shaped objects may lead to tissue destruction, ulceration and perforation.

Immediately after the removal of a foreign body the swallowing function should be tested.

The persistence of symptoms referable to the esophagus in the presence of negative roentgen ray findings calls for a diagnostic esophagoscopy.

JEROME R HEAD M D

Manges W F Roentgen Diagnosis of Foreign Bodies in the Esophagus *Am J Roentgenol* 1927 xlvii 44

Foreign bodies lodge in the esophagus because they are too large to pass because they become embedded in the mucous membrane or because the esophageal lumen is narrowed. In some cases they may perforate and project into the peri esophageal tissues.

Large foreign bodies causing complete or partial obstruction are more common in children than in adults, whereas small slender foreign bodies which become embedded are more common in adults. The most common large foreign body is a coin and the most common small embedded foreign body a small fragment of bone. The perforating foreign body is very rare. In cases of stricture the cause is most often a piece of meat. The most common location for all esophageal foreign bodies to lodge is at or just below the level of the suprasternal notch.

In the roentgenological examination, the following should be insisted upon (1) the removal of all clothing, (2) examination of the entire tract from the nasopharynx to the anus, (3) exposures made in both the anteroposterior and the lateral position, and (4) the best quality of roentgenograms.

To determine the site of the large, non opaque foreign body, a fairly thick watery mixture of bismuth subcarbonate should be used to show either a filling defect or a deviation of the stream. In examination for the small, slender, non opaque foreign body that becomes embedded, the patient should be made to swallow a wet No. 00 capsule filled with bismuth subcarbonate. When there is a history of the swallowing of glass, it is unwise to use capsules or any hard substance. The greatest width of oesophageal foreign bodies is in the lateral direction, while that of the tracheal foreign body is in the anteroposterior direction.

The complications and sequelæ that may arise from foreign bodies in the oesophagus are (1) acute hunger and thirst (2) the aspiration of particles of food into the trachea with subsequent pulmonary infection, (3) injury to the oesophageal wall with subsequent stricture and (4) peri oesophageal infection. CHARLES H. HEACOCK, M.D.

#### Rovsing T. The Technique of My Method of Antethoracic Oesophagoplasty. *Surg. Gynec. & Obst.*, 1916, xliii, 781.

Rovsing discusses the various oesophagoplastic methods used for the past twenty years all of which are based on the conviction that the new gullet must be capable of peristaltic motion. In his opinion, peristalsis is not necessary as in most successful cases if it is present at all it very rapidly ceases whether the new oesophagus was formed from the jejunum, the colon, or the stomach. Moreover Gluck and Torek's cases have shown that a simple rubber drain uniting an oesophagostomy with a gastrostomy will function satisfactorily for many years. These considerations led Rovsing to work out a simple and less dangerous skin plastic method which he has employed successfully in four cases. The operation is done in four stages.

**First stage.** Gastrostomy. The small portion of the anterior wall of stomach that is used is drawn up through an opening in the left rectus muscle and an opening of a size to admit the largest Pezzer drain is made. The button of the drain is fastened tightly to the anterior wall of the stomach.

**Second stage.** Oesophagostomy. This is performed through an oblique incision along the sternomastoid. The oesophagus is freed, brought up to the skin incision and cut between clamps the inferior end then being brought out through a small incision in the left supraclavicular fossa, fixed to the skin and drained with a tight rubber drain. The oral oesophageal end is sutured to the lower part of the oblique incision, and a rubber tube is introduced into the oesophagus from the mouth and led out through the oesophagostomy.

**Third stage.** The formation of the new oesophagus. Two parallel skin incisions are made, the distance between them being the circumference of the new organ and the skin is dissected inward so that it can be united in the midline around a drain. The drain is later removed. The two skin incisions meet above the oesophagostomy at the upper end, while at the lower end they correspond to the plane of the gastrostomy but do not meet around it as the gastrostomy must be kept open until the upper part of the antethoracic oesophagus is entirely healed. The oesophageal drain is brought down into a low placed glass receptacle.

**Fourth stage.** When the wound is well healed, the Pezzer drain and the oesophageal drain are removed, the gastrostomy is closed and the two parallel incisions are extended to meet each other around the oesophagostomy.

JACOB M. MORA, M.D.

#### Lerche W. Infected Mediastinal Lymph Nodes as a Source of Mediastinitis. *Arch. Surg.* 1917, xiv, 285.

The tracheobronchial lymph nodes which receive lymphatics from the lungs and bronchi and the lower trachea and its bifurcation are very important as germ harboring depots. An abscess of these nodes may discharge into a bronchus with subsequent healing, but a number of autopsies have revealed rupture into one of the large blood vessels or into the heart and other mediastinal organs.

The proper diagnosis and treatment are dependent upon an accurate knowledge of the topography of the various groups of lymph nodes and the surrounding organs. These nodes consist of three main groups situated in the right, the left and the inferior tracheobronchial spaces, as described by Sukienikow. Cases with involvement of each of these spaces are reported with anatomical sketches and roentgenograms. The symptoms consisted as a rule of a dry cough and a substernal pain which was increased by deep breathing and swallowing. Pressure upon the recurrent nerve and the oesophagus caused hoarseness and dysphagia.

The author reports also a case in which inflammation of the eparterial lymph nodes led to compression of the eparterial bronchus. In another case the abscess ruptured through the oesophagus, leaving a fistulous opening through which applications could be made to the mediastinal abscess cavity.

As the left phrenic nerve is in close proximity to the pre aortic group of lymph nodes the author believes that the peradenitis often involves this nerve with resulting insufficiency of the corresponding side of the diaphragm.

These inflammations are attributed largely to influenzal and tuberculous infections but a case due to a streptococcus infection has been reported. Subdiaphragmatic infections following appendectomy may give rise to mediastinal gland involvement as the mediastinal glands receive lymph from the liver and diaphragm. Also in the majority of cases the

lymph vessels of the falciform ligament of the liver drain to the mediastinal glands

The bronchoscope and the œsophagoscope are of great aid in the diagnosis and treatment of these cases. The author advocates mediastinotomy as soon as a positive diagnosis of mediastinal abscess is made

GEORGE A COLLETT M D

### MISCELLANEOUS

Burrell L S T Roberts J E H Hastings S Melville S and Others The Diagnosis and Treatment of Intrathoracic New Growths  
*Proc Roy Soc Med Lond 1926 xx 151*

This article is a symposium by physicians surgeons laryngologists and roentgenologists. The fact is emphasized that for efficient diagnosis and treatment these specialists must work together

BURRELL presents a classification of intrathoracic neoplasms and cites cases illustrating the symptoms and signs. Primary mediastinal growths include sarcoma Hodgkin's disease fibroma and dermoid. The first signs are those of pressure. In one case the first signs included hypertrophic osteoarthropathy. Dyspnoea and pain are common early symptoms but may develop only in the later stages.

Endothelioma of the pleura causes pain and a rapidly recurring but not always bloody effusion.

Carcinoma of the lung is more common than was formerly believed. It is rarely recognized being frequently mistaken for pulmonary tuberculosis. Tuberculosis and other chronic pulmonary conditions predispose to it. It is usually of bronchial origin and its first symptoms are cough sputum and hæmoptysis. The late symptoms are those of sepsis secondary to bronchial obstruction.

BURRELL emphasizes the importance of early diagnosis of intrathoracic new growths.

ROBERTS speaking of the surgical treatment says that surgery is suitable only for benign mediastinal growths. For those in the lower part of the mediastinum he advises a long intercostal incision and for those higher up a splitting of the sternum. Malignant growths are best treated with the X ray or radium.

Primary bronchogenic carcinoma if diagnosed sufficiently early, can be removed with the bronchoscope.

HASTINGS discussing the subject from the point of view of the laryngologist speaks of the recurrent nerve paralysis and compression of the trachea caused by mediastinal growths and of the diagnostic and therapeutic value of bronchoscopy in cases of primary tumor of the trachea and bronchi.

MELVILLE dealing with the X ray aspects of intrathoracic tumors emphasizes the increased incidence of the neoplasms under discussion. He cites statistics showing that carcinomata of the lung constitute 6 per cent of all primary carcinomata.

Fibroma of the mediastinum presents a well defined rounded opacity springing from the posterior part of the thoracic wall and pushing the lung in front of it. Collapsing the lung from in front of the tumor by artificial pneumothorax is important in the diagnosis.

Dermoid cysts usually arise in the anterior mediastinum. Occasionally it is possible to see fragments of bone or teeth in their contents.

The first sign of bronchogenic carcinoma is usually a typical massive collapse caused by obstruction of the bronchus. Later parenchymal and pleural sepsis frequently obscure the picture.

Malignant metastases in the lung present a typical picture. It is impossible to distinguish between sarcomatous and carcinomatous metastases.

The roentgenological diagnosis of mediastinal new growths requires care and often an elaborate technique including oblique and lateral views and the injection of bismuth into the œsophagus or the injection of lipiodol into the bronchi. It is important to determine that the mass is not connected with the aorta or lung and that it is not thyroid.

KNOX discussing radiotherapy emphasizes first the importance of accurate diagnosis preferably by biopsy. If this is impossible the results of therapy will often suggest the type of tumor. The benign growths and carcinoma rarely respond. Lymphogenic and sarcomatous tumors are rapidly affected. The greater part of KNOX'S discussion deals with the technique of radiotherapy. JEROME R HEAD M D

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

**Forlini E. The Retroperitoneal Fossæ and Treitz Hernia** (Contributo alla conoscenza delle cosiddette fossette retroperitoneali e delle ernie del Treitz)  
Arch ital di chir 19 6 xvi 481

The author describes the anatomy of the retroperitoneal fossæ including the intersigmoid superior ileocaecal inferior ileocaecal or ileo appendicular subcaecal duodenojejunal and superior and inferior duodenal fossæ, and describes the anatomical findings in five cases of Treitz' hernia

The first case was that of a soldier who was taken with severe diarrhoea and vomiting while in the trenches. Cholera was suspected. The patient was sent to the hospital and soon died. Autopsy showed the large omentum to be normal and free. Beneath it was a packet of small intestine which instead of being free was contained in a properitoneal bursa constituting the ordinary form of Treitz' hernia. It was a large sac containing all of the small intestine which was continuous with the posterior wall of the abdomen and surrounded on the sides and above by the colon. It was formed of a transparent membrane through which the loops of small intestine could be seen clearly. The opening into the sac was through an oval fenestra about 8 by 6 cm in size, situated beneath the point where the duodenum passes into the jejunum just at the right of the spinal column. The opening was toward the right. There was a partial post inflammatory adhesion of the ileum and mesentery to the postero inferior margin of the opening so that the intestine could not be withdrawn as it usually can be in Treitz' hernia. There was also a torsion of the mesentery which persisted even after the mesentery was freed.

Case 2 was that of a man 72 years of age who was in the hospital for six days with intense pain in the abdomen, continuous vomiting, and the passage of numerous scanty liquid stools. At autopsy the small intestine from the duodenum to the middle of the ileum was found in the sac of a Treitz hernia the opening of which was beneath the transverse colon. The end of the ileum the cæcum and the right part of the colon had descended by invagination into the left part of the transverse and descending colon to within 1 cm of the anus. There was an inguinal hernia on each side and the one on the left side contained the ectopic testicle. There was a purulent exudate on the parietal and visceral peritoneum. The diagnosis was suppurative peritonitis following intestinal invagination in a subject with a Treitz hernia.

The third case was that of a child 4 years of age who died of tuberculous meningitis. Autopsy showed a sac the size of a child's head in front of the

left kidney with the descending colon running above. The sigmoid described a curve, bounding the sac below and on the left. The cæcum bounded it to the right and below. The transverse mesocolon was completely free, while the right fold of the descending mesocolon covered the sac so that it looked as if the sac were formed of the fold itself. The sac contained almost all of the jejunum. It had an oval opening about 4 by 5 cm in diameter beneath the transverse colon.

Case 4 was that of a woman of 90 years who died after fracture of the hip. Autopsy showed the large intestine to be normal in position but distended with gas. The small intestine was in a sac formed of peritoneum surrounded above and at the sides by the colon. The sac was the size of a child's head and situated entirely in the left side of the abdomen. It was implanted by a small base which looked like a pedicle. The superior mesenteric vein ran in the upper lip of the sac which lay beneath the transverse colon to the left of the vertebral column in the usual position of the left duodenal fossa.

Case 5 was that of a woman about 50 years of age. At autopsy almost all of the small intestine was found in a sac which had an opening beneath the transverse colon. The colon had been pushed to one side and upward so that it surrounded the sac containing the small intestine.

These cases present the usual picture of Treitz hernia. While the literature says that the incidence of the Treitz and Broesiche hernia is about equal and both types are twice as frequent in males as females, all of these cases were cases of the Treitz type. Three of the patients were females. Two of the hernia occupied the whole abdominal cavity and were surrounded by large intestine. The others were not complete and contained parts of the small intestine. One had a large sac with a small opening directed from above downward and was free. It is to say it seemed to be formed chiefly of the parietal peritoneum with little involvement of the descending mesocolon. In the two others it was situated almost completely beneath the descending colon in one of them high up in the splenic flexure. These various relations of the sac to the descending mesocolon depend on the more or less resistance offered by the various parts of the retroperitoneal connective tissue to the traction of the walls of the sac and the attachment of the peritoneum from the posterior parietal peritoneum to a smooth surface as does the small intestine but passes over various organs such as the pancreas, kidneys etc., forming a sac. There is an abundance of fat in the retroperitoneum.

The posterior parietal peritoneum is attached to a smooth surface as does the small intestine but passes over various organs such as the pancreas, kidneys etc., forming a sac. There is an abundance of fat in the retroperitoneum.

connective tissue is looser so that slight traction easily cause detachment at these points. Detachment is easier on the left side than on the right and varies in different persons. The herniating intestine follows the line of least resistance this explaining the different positions in the different cases. In the third case besides the portal of entry there was another fossa corresponding to the duodenojejunal fossa. Apparently the opening of the hernia was in the left duodenal fossa bounded by the inferior mesenteric vein and the other fossa was the co-existing duodenojejunal fossa.

Some of these cases such as the second one in which in addition to the Treitz hernia there was a double inguinal hernia seem to indicate a congenital origin of these hernia. Congenital predisposition is indicated also by the cases in which large fossae have been found without penetration of intestine.

AUDREY G. MORGAN M.D.

**Cornioley M. Mesenteric Cysts** (Contribution à l'étude des kistes mésenteriques) *Trav. chir.* 1916 11: 566

There has been a great deal of confusion in the classification of mesenteric cysts because it has been made partly from the clinical and partly from the pathologico-anatomical point of view. The author suggests a separate clinical and pathologico-anatomical classification. Clinically the cysts may be divided into retroperitoneal cysts and pure mesenteric cysts with subdivision of the latter into cysts of the meso-appendix, the mesentery, and the meso-colon. The pathologico-anatomical classification is as follows: (1) cysts from retention in the lymphatic vessels which are subdivided into chylous, serous, hæmorrhagic and purulent cysts; (2) cysts from the degeneration of lymphatic glands with the same subdivisions; (3) cystic lymphangiomas of the mesentery, also with the same subdivisions and called chylangiomas when their contents are chylous; (4) congenital cysts, dermoid or enterodermoid; (5) dermoid cysts, teratoid and mixed; (6) enterocystomas and (7) parasitic cysts.

Cornioley reports two cases, one that of a woman of 35 years and one that of a woman of 43 years. While these two cysts would ordinarily be classified as cysts of the mesentery the first was really a retroperitoneal enterocystoma and the second a cystic chylangioma of the mesentery.

The first symptoms are rather vague intestinal symptoms, loss of appetite and diarrhoea followed by constipation. The cyst may develop for some time without causing any symptoms at all. Then acute symptoms may begin suddenly due to occlusion of the intestine rather than to the cyst itself. In the author's case there was distention of the abdomen with pain, uncontrollable bilious vomiting, abdominal facies and a rapid pulse but no fever.

Often when there is no palpable tumor a diagnosis of volvulus is made. Volvulus often occurs in cases of mesenteric cysts though the occlusion may be due to compression of a loop of intestine. A mesen-

teric cyst is movable and can readily cause volvulus while a retroperitoneal cyst must be quite large before it can compress a loop of intestine between itself and the anterior wall of the abdomen. The latter occurred beyond doubt in the author's first case and in a case reported by Wildbolz. In the author's case it was the ascending colon that was compressed and in Wildbolz the transverse colon. Generally the occlusion is not total therefore operation may be deferred for hours or even for days. This is explained by the fact that often a volvulus is one of only 90 instead of 180 degrees.

A symptom often noted by the patient is intra-abdominal ballooning on flexion and extension of the trunk. This is of value in the localization of the tumor. A symptom present in all cases of mesenteric cyst that have been reported was a reflex contraction of the abdominal wall during periods of subacute crisis. As a peritoneal reaction has seldom been found at operation the author thinks this is due to traction on the celiac plexus by the weight of the cyst.

The percussion sounds vary depending on whether the cyst is covered by intestine or not. Mesenteric cysts are generally smooth and oval a fact which makes it possible to distinguish them from cancers of the intestine which are generally nodular. The diagnosis of mesenteric cysts which are movable is not particularly difficult but it may be impossible to distinguish fixed retroperitoneal cysts from tumors of the pancreas, spleen or liver. It is important to make this differentiation because some of these organ cysts cannot be extirpated on account of adhesions to the organ from which they originate.

When a cyst suppurates which is quite rare the symptoms of peritonitis may mask those of the cyst itself. Cysts have been known to rupture without suppuration causing a chylous or serous peritonitis the cause of which is rarely diagnosed.

The treatment is removal of the cyst unless it is extremely large or the general condition is very poor. If the loop of intestine with which the cyst is connected has suffered serious injury or if the mesenteric vessel of the segment are in poor condition the loop should be removed with the cyst. Marsupialization is not justifiable except in such cases. These cysts rarely recur.

AUDREY G. MORGAN M.D.

## GASTRO INTESTINAL TRACT

**Faber K. Holst J. E. and Norgaard A.** An Investigation of the Function of the Stomach by Fractional Removal of the Fast Meal *Acta Med. Scand.* 1926 114: 570

Fractional examinations of the gastric contents were made by the author eighty three times after an oatmeal porridge meal and seventy six times after a rusk meal. The conditions studied were chiefly digestive disturbances.

In seventy nine tests the amount of the fasting secretion was 20 c.c.m. and in four tests 100 c.c.m.

or more. As a rule the quantity of secretion was large when the maximum acidity in the subsequent test meal was high. In the same cases the acidity of the secretion was high. A low acidity in amounts of secretion of 20 ccm or less has no clinical significance.

The acidity curves in the fractional withdrawal of the test meal in different patients are reproduced.

The time of greatest acidity (expressed as the Congo red figure) was most frequently found from one to one and a half hours after the ingestion of the test meal, earlier with low acidity and later with high acidity.

As a rule the Congo red values after one hour are an expression of the highest values of the acidity curve.

True achylia must be distinguished from false achylia. The latter can be detected by fractional examination. A phenolphthalein figure above 25 and high pepsin values in an Ewald test meal which does not react to Congo red paper indicate false achylia.

On account of the regurgitation of the alkaline duodenal contents the stomach contents may acquire, once or more frequently during digestion, a hydrogen ion concentration which is below that at which pepsin is active and the Congo red reaction is positive.

The regurgitation of the duodenal contents is most often observed toward the end of gastric digestion. It is just as common in anacid as in hyperacid test meals and is therefore not a characteristic of the latter.

On investigation with the iodine test starch was usually found to disappear from the stomach from two to two and a half hours after the ingestion of an oatmeal porridge meal and in from two and a half to two and three fourths hours after the ingestion of a rusk meal. Emptying proceeds more slowly the greater the acidity of the test meal.

In sixteen cases of achylia, a rusk meal usually left the stomach within nine and five tenths hours after its ingestion.

A comparison between the acid figures in Ewald's test meal and in the corresponding fractional investigation showed that the former gave a satisfactory indication of the maximum acidity of the latter.

In daily clinical work Ewald's test meal will suffice for the present for investigations of the hydrochloric acid secretion of the stomach. The fractional examination will be necessary in only special cases.

Andresen A F R Fractional Gastric Analysis with Histamine *Ann Clin Med* 1926 v 472

Although fractional gastric analysis is time consuming it is of great diagnostic value. A water test meal is not efficient as it too often shows achylia. The author therefore uses histamine dihydrochloride hypodermically to stimulate gastric secretion. This procedure is not attended by any untoward symptoms, and the results obtained from

the substitution of hypodermic injections of histamine and a 300 ccm water meal for the usual cracker and water meal have been eminently satisfactory. Nearly 300 cases have been tested in this manner.

The curves of acidity are not to be considered the most important factors in fractional gastric analysis. About the only factors of diagnostic importance are the motor efficiency of the stomach and a study and comparison of admixtures found in the removed specimen.

The author describes in detail the technique he uses. In addition to titration specimens are examined microscopically for raisin residue, gross blood or pus or other admixtures. The different findings and curves are explained and various diseases with their findings are cited.

At the completion of the test with the patient lying down and the abdomen exposed the stomach is inflated through the tube and the size and shape of the stomach and the location of the greater curvature are noted. This is often a more reliable method than X ray examination.

HERMAN H HUBER M D

Keefer C S and Bloomfield A L The Significance of Gastric Anacidity *Bull Johns Hopkins Hosp* Balt 19 6 XXXIX 304

There is no definite correlation between the degree of acid secretion and physical fitness. Approximately one of twenty normal persons has a deficient gastric secretion.

The authors' observations were made in a study of consecutive gastric analyses in the medical wards of the Johns Hopkins Hospital, Baltimore. In 1,500 analyses anacidity was found in 390 (26 per cent). The diagnosis was based in each case on the absence of free hydrochloric acid in the gastric contents from forty five minutes to one hour after the ingestion of the Ewald test meal. However, the determination of the pH of the gastric contents shows that this test lacks refinement. Many persons with apparent anacidity are able to secrete acid. When the histamine test is applied the incidence of anacidity is still further reduced and becomes practically limited to persons with definite anatomical disease of the stomach such as cancer and the gastritis of pernicious anemia.

The material studied was classified as follows: (1) patients with digestive disorders, (2) those with various diseases not primarily of the digestive tract, and (3) those with no evidence of anatomical disease.

The frequency of anacidity increases with age, whether organic disease is present or not. The investigation yielded no definite evidence for the assumption that diseases other than disease of the stomach in themselves influence the occurrence of anacidity. The authors found no evidence that anacidity *per se* causes any specific symptoms or signs. In brief, they were unable to discover any definite correlation between anacidity and any other factor except age.

With regard to gastric motility the generalization is made that stomachs of the anacidity group empty more quickly than those of the normal acidity group

CHARLES F. DEBOIS M.D.

**Baggio G.** Experimental Gastric Ulcer from Obstruction to the Emptying of the Stomach (Ulceri gastriche sperimentali da ostacolo allo svuotamento dello stomaco) *Poliedin* Rome 1926 xxxiii sez. chir. 437

The author performed experiments on animals to determine the cause of ulcer of the stomach and duodenum. He operated on ten animals folding in the anterior wall of the stomach and fixing the introversion with catgut sutures. The posterior wall was not touched at all and the introversions were never deep enough to obstruct the lumen of the stomach completely. The trauma from the operation was very slight.

Six of the animals died after intervals ranging from four to fifty four days and the four others were killed at the end of three months. The four that were killed and one of the animals that died after fourteen days did not show any signs of ulcer but the others showed lesions varying from simple erosion to an advanced stage of typical gastric ulcer.

The lesions were not only on the introversed wall but also in some cases on the posterior wall opposite the introversion. They were always in zones connected functionally with the folded-in part. The recent lesions were associated with extravasations of blood into the walls of the stomach.

Baggio believes the ulcers were due to the traumatic action of the ingesta on the stomach wall as a result of the increased intragastric pressure from the obstruction caused by the introversions. This trauma favored the digestion of the wall by the gastric juice.

AUDREY G. MORGA M.D.

**Lahey F. H. and Jordan S. M.** When To Operate in Cases of Peptic Ulcer. *A. J. Surg.* 1926 19, 1111-1120

Lahey and Jordan are attempting to teach patients to manage their gastric ulcers by diet and medical measures. They believe that surgery is not the primary method of treatment and that because of the recurrence of ulcer and the mortality of operation it becomes the duty of the surgeon who accepts an ulcer case regarded as a medical failure to be highly critical of that medical treatment and before suggesting surgery to try medical management. The course of treatment advocated should be of known thoroughness both in outline and in applicability on the part of the patient.

They regard operation as indicated for (1) perforated ulcers (2) ulcers with unrelievable cicatricial obstruction (3) cases of recurrent severe hemorrhage (4) cases in which carcinoma can be reasonably suspected and (5) cases of failure with well known adequate medical management.

MORRIS H. KAHN M.D.

**Finney J. M. T.** The Surgery of Gastric and Duodenal Ulcer. *Am. J. Surg.* 1926 1, 323

Finney gives a brief review of our former knowledge of gastric and duodenal ulcer. He states that the two extremes—consistent opposition to any form of operation and the indiscriminate resection of large portions of stomach wall—are to be avoided. The middle course—a conservative type of operation—is followed by the large majority of surgeons of experience.

The diagnosis of gastric and duodenal ulcer is based on the careful accumulation and interpretation of information derived from many sources (close co-operation between the internist and the surgeon is essential).

Cicatricial contraction in healing perforation and hemorrhage are complications of importance to the surgeon in the selection of the type of operation to be performed or other treatment to be given.

The theories advanced as to the origin of gastric and duodenal ulcers include the inflammatory neurogenic, circulatory, bacterial, digestive and corrosive theories. In all probability, chronic ulcer of the stomach or duodenum is due not to a single cause acting alone but to a combination of causes acting more or less together. That ulcer of the stomach may be the origin of carcinoma seems definitely established. The work of Cabot and Adie and of Williams and Ewing is very enlightening. According to Wilson and MacCarty 63 per cent of ulcers develop secondary carcinoma. In Finney's opinion only from 10 to 15 per cent of gastric ulcers undergo carcinomatous transformation. Consequently the surgeon's method of procedure—radical or conservative—will depend upon which view he accepts and whether the lesion found appears to be a simple ulcer or a precancerous ulcer.

The conservative operations may be divided into (1) those directed toward local excision, cauterization or suture of the ulcer and (2) local excision with gastroenterostomy or pyloroplasty alone. In a radical operation not only the ulcer but the entire ulcer-bearing area described by Rodman must be removed (gastrectomy by the Billroth I or II method).

Of course the choice of operation should depend entirely upon the patient's condition. In Finney's opinion pyloroplasty or gastroduodenostomy associated when possible with resection of the ulcer would be the procedure of choice. Extensive resection of the stomach is reserved almost entirely for malignant disease.

The sacrifice of large portions of the stomach is too great a risk to be assumed by the average surgeon.

The surgeon should be guided entirely by the facts established and the circumstances found. If for any reason a more or less extensive resection of the pyloric portion of the stomach is indicated, gastroduodenostomy (Billroth I) or Haberer-Finney modification should be done.

HERMAN H. HUBER M.D.

Flint E R Gastroduodenostomy *Lancet* 1927  
cxiii 12

Flint has treated nearly 200 cases of chronic duodenal ulcer by gastroduodenostomy. In the technique of the operation the angle between the second and third parts of the duodenum should be freed rather than the upper angle where the first and second parts meet, as at this point there are many vessels. Flint does not use a clamp on the duodenum and does not insert any stitches in the gastric mucosa. Omission of the duodenal clamp allows digital palpation of the ulcer. The ulcer is sutured over. A complete block caused by the stitches has never been found in the author's cases. As the duodenum is very irritable Flint believes that its handling accounts for the postoperative vomiting.

After the operation glucose solution is given by rectum in the author's cases and nothing is allowed by mouth for a period of from twenty four to forty eight hours.

There have been two deaths both those of patients who were emaciated before the operation. There has been no anastomotic ulcer. Should such an ulcer develop it is still possible to perform a posterior gastro-enterostomy.

J FRANK DOUGHTY M D

Troell A Benign Tumors of the Stomach  
Especially from the Point of View of Diagnosis  
(Les tumeurs benignes de l'estomac au point de vue  
surtout diagnostique) *Acta radiol* 1926 vii 268

Fairly numerous cases confirm the theory that the roentgenological finding of a sharply defined rounded mobile filling defect in the stomach shadow after the ingestion of an ordinary opaque meal is practically pathognomonic of a benign new formation (myoma angioma etc.). Variation of the emptying time of the stomach at different examinations is of diagnostic importance as it may be due to the presence of a polyp-like massive tumor in the pyloric region which tends to force itself into the pylorus.

The author's cases of submucous myoma and papilloma of the stomach confirm the great diagnostic value of the roentgen examination of this region.

Of decisive importance is the roentgenological demonstration in the stomach shadow of a large even rounded filling defect with good mobility and near it a soft contour. In cases in which the defect observed after the usual opaque meal exhibits a varying appearance on different occasions (papilloma) an examination should be made after inflation of the stomach with air. When this is done there is a prospect that the shadow will be rendered distinct. The emptying of the stomach may vary more than in cancer, this being noted in both the routine clinical examination for motility and the roentgen ray examination. The volume of the stomach usually does not exhibit any restrictions.

Polypoid of the stomach can be diagnosed from the roentgenological demonstration of a constant undulancy over a part of the greater curvature. Isolated polyps are shown by persistent defects within this contour.

The very valuable diagnostic features referred to go far to prove the desirability of a careful roentgenological examination, especially in the cases of patients with attacks of melæna for a relatively long time but without any other symptoms of ulcer and the cases of marked anemia of a secondary type which arises gradually without any demonstrable cause.

In the treatment, resection of the stomach is preferable to mere extirpation of the tumor as not infrequently it is impossible to exclude malignancy even by inspection of the removed tumor and malignant degeneration of papillomata and myomata seems to be comparatively common.

Clairmont P Extirpation of Carcinoma of the Cardia  
(Ueber die Extirpation des Kardiakarzinoms) *Arch f klin Chir* 1916 cxi 343

Clairmont reports his conclusions with regard to the operative treatment of carcinoma of the cardia. On the basis of his own experience and the reports in the literature he divides the cases into four groups.

Group 1 Cases in which an entirely abdominal operation is possible (laparotomy with extirpation of the cardia and gastric resection followed by end-to-end or end-to-side œsophagogastrostomy with or without the formation of an alimentary fistula). Of four of the author's patients who were treated in this manner, one has remained cured for more than four years. The others died after the operation. Peugnez, Voelker, and Bircher have reported cured cases.

Group 2 Cases requiring a laparomediatomomy with extirpation of the cardia and gastric resection followed by transdiaphragmatic extrapleural œsophagogastrostomy or œsophagojejunostomy. The author had two cases in this group. Both of the patients died.

Group 3 Cases requiring a laparopleurotomy with extirpation of the cardia and gastric resection followed by transdiaphragmatic transpleural œsophagogastrostomy or if anastomosis is impossible, the formation of an external fistula (oral œsophagostomy, gastrostomy) and restoration of continuity with a tube. The author had no case in this group. Zaajer and Hedblom have reported successful results from this treatment.

Group 4 Cases requiring a laparotomy with exposure of the œsophagus in the cervical region and its intrathoracic (transpleural retropleural blunt bimanual) detachment followed by resection of the stomach with total extirpation of the cardia and œsophagus and if anastomosis is impossible the formation of an alimentary fistula or collar œsophagogastrostomy. The author had one case in this group. The result was unsuccessful.



Clairmont is convinced that the extirpation of carcinoma of the cardia should be attempted as there have been instances in which the operation has resulted in a cure.

Carcinoma of the cardia is not a rare condition and often occurs between the fortieth and fiftieth years of age. It is frequently a papillary carcinoma with little tendency to penetrate deeply. The patient is affected more by inanition than by the malignancy of the tumor. The tumor has little tendency to advance upward beyond the cardia but it pushes the usually unchanged œsophageal mucus upward thereby leading to an erroneous diagnosis when a specimen is excised for microscopic examination. Unsuccessful results of treatment have been due chiefly to the fact that the diagnosis was made late and the case was inoperable when first seen.

The technique which has been developed only by experimentation on animals must be further perfected. In the author's opinion the chief essential is an early diagnosis. Because of the untrustworthiness of all clinical methods of diagnosis including œsophagostomy the removal of a specimen and X-ray examination such symptoms as cardiospasm beginning dilatation and atony must be investigated by exploratory laparotomy. Cases in which the general condition is poor and there are extensive and fixed lymph gland metastases with adhesions to the pancreas or the caliac trunk infiltration of the diaphragm or firm fixation in the œsophageal hiatus are to be regarded as inoperable. Involvement of the spleen renders the prognosis unfavorable but does not definitely contraindicate operation.

The operation should always be begun with a laparotomy (Kueltnner). In cases in which the carcinoma has not advanced upward beyond the cardia and œsophagogastrostomy can be done without difficulty it should remain an abdominal operation. For other cases the combined methods are to be considered. In Clairmont's opinion the best and safest method of approaching the lower thoracic portion of the œsophagus is extirpation of the twelfth rib and resection of the tenth and eleventh ribs followed by retropleural exposure through the posterior mediastinum forward passing around the left side of the aorta as described by Gregoire. The radical operation with restoration of continuity is possible only when the defect is not greater than 8 cm. When the defect is larger the formation of an external fistula is indicated. The retropleural route is always to be preferred to the transpleural route.

The operation should be performed so far as possible under local anesthesia. It still remains to be determined whether a several stage operation is preferable to a one stage procedure and whether section of the phrenic nerve should be done in the neck or its passage through the diaphragm. The use of jejunostomy as an alimentary fistula is an important aid in the extirpation of a carcinoma of the cardia.

VON REDWITZ (Z)

Delore Y Mallet Guy P and Burlet J Late  
Results of Resection of the Stomach for Cancer  
(Étude clinique et pronostic des suites éloignées  
de la résection gastrique pour cancer) Presse méd  
Par 1926 XXIV 1250

Most statistics on resection of the stomach for cancer emphasize the technique and immediate results. Few of them show that the cases have been followed up clinically for any considerable period of time. The authors report 166 cases in which resection was performed by Delore in the period from 1903 to 1926. Of the 130 patients who recovered from the operation eighty eight have been followed up the rest were operated upon too recently to be included in the study. Of the eighty eight traced twenty two (25 per cent) lived more than three years but eight of them (9 per cent) died after more than three years. Therefore only 16 per cent made a permanent recovery. Gastrectomy like other methods, gives a rather low percentage of permanent recoveries but is generally followed by a period of restored health before recurrence. In the cases reviewed the average duration of this period was eighteen months. The authors find also that the quality and length of the temporary cure are much better after resection than after palliative operations.

It is difficult to establish a period after which recovery can be said to be certain. Three years is quite generally accepted but one of the authors' patients died of recurrence after six years and another after six years and three months. Of the author's fourteen patients reported as permanently cured only four are in the rather uncertain period between three and six years. Typical case histories are given of patients in excellent health after more than that period whose lives were beyond doubt saved by the operation. A permanent recovery in as few as 16 per cent of the cases more than justifies the operation.

It is very difficult to make a prognosis as to permanent recovery. Stenosis of the pylorus has been considered as a sign of a favorable prognosis but the authors' figures do not confirm this theory. The average period before recurrence was eighteen months in patients with stenosis of the pylorus and nineteen months in the others. 69 per cent of the patients with stenosis of the pylorus survived more than a year and 67 per cent of those with normal evacuation of the stomach.

Evidently the prognosis should depend on the extent to which the cancer has become generalized outside the stomach. As the cancer is disseminated by the lymphatic circulation it might be supposed that enlarged glands would furnish an indication as to the prognosis but the percentages of survival for more than a year were the same in the patients with enlarged glands as in those whose glands were not enlarged. This is probably explained by the fact that the enlargement of the glands was caused by inflammation and not by invasion of the glands by the tumor.

Colloid cancers were more malignant than the other forms, only 50 per cent of the patients with colloid cancer surviving for more than a year while 86 per cent of those with other forms of cancer survived more than a year. It has been commonly believed that ulcerated cancer is more benign than the non ulcerated forms but the authors found this true to only a slight extent.

As every ulcer of the stomach is a potential cancer, resection is frequently indicated in cases of ulcer and the authors believe it is absolutely indicated for old indurated callous ulcers which are often in the process of degenerating.

ALFRED G. MORGAN M.D.

Palma, R. Intestinal Absorption in Ileus from Occlusion. La. J. Medicine 1955, 12: 100-103.

The importance of intestinal absorption in causing the serious symptoms of occlusion of the intestine has been recognized for a long time but there has been a marked discrepancy in the reports of experimental work. The author carried out investigations on female dogs to determine whether a possible deviation in intestinal absorption in occlusion is due solely to functional changes in the mucous membrane or whether the whole wall of the intestine is involved. He used phenolphthalein as an indicator recording the beginning of elimination and the amount excreted in a given time. The observations were made in the first forty-eight hours after occlusion or the intestine and were preceded by control examinations on normal animals.

It was found that up to a maximum of forty-eight hours after the occlusion on the capacity for absorption at the central part of the intestine is decreased for some distance from the obstruction. This functional reaction occurs in the peripheral part of the intestine also but not to so great a degree below the lesion. The disturbance of function increases progressively from the time of the occlusion. The disturbance includes all of the tissues of the wall of the intestine but the decrease in absorption is due solely to lesions of the wall of the intestine. The duodenum and jejunum show greater reversibility than the rest of the small intestine which is manifested both by the greater reaction of the duodenum and jejunum after resection of the intestine and the greater degree of change in the intestine as a whole when the occlusion is in the duodenum or jejunum.

ANDREW G. MORGAN, M.D.

Gueullette, R. Intestinal Invagination Its Clinical Forms in the Adult An Experimental and Roentgen Study (De l'invagination intestinale ses formes cliniques chez l'adulte étude expérimentale et radiologique) *Pres. med.*, Par., 1906, xxxv, 124.

Invagination of the intestine in the adult may be simple, with three cylinders of intestinal wall and

progressive or retrograde (ileal colocolic ileocecal colocolic) or it may be complex with five seven or more cylinders. It is due to two factors which may act separately or in conjunction—the first a physiological or anatomical retraction of the intestine on which exaggerated peristalsis acts until it finally pushes a part of the bowel into the next lower segment which is in repose and the second traction on the wall of the intestine by a tumor

When once the invagination has begun the invaginated segment continues to move forward. Sometimes this forward movement is furthered by abnormal anatomical conditions such as an abnormally long mesocolon but sooner or later it is arrested by the development of circulatory disturbances and inflammation. These occasionally cause amputation of the invaginated segment but more frequently strangulate it.

The cause of invagination may be anything that decreases the caliber of the intestine and produces hyperperistalsis in 40 per cent of the cases in adults the cause is a tumor.

The diagnosis is based on pain, diarrhea, blood-stools, vomiting, and possibly an abdominal tumor. There are three characteristic roentgen appearances: the capula p icture which shows the vertex of the dome, the 'tident p icture' which shows the circular ring at the beginning of the invagination and the lumen of the invaginated part, and a shortening or apparent absence of one segment of the colon.

The disease may be very acute causing death in a few days as in the infant or very chronic lasting for years with various intervening stages. One special form is retrograde invagination of the jejunum into the stomach after gastro-enterotomy. This is a very serious condition on its own. While spontaneous invagination or spontaneous elimination of the invaginated segment may occur this is very rare and cannot be counted on and even with apparent recovery in this way the patient is exposed to serious danger. If the condition is treated in time the prognosis is not nearly so unfavorable and it becomes very good if the diagnosis is made and treatment given early before signs of toxemia have developed.

Treatment by external maneuvers and the insufflation of air into the rectum should be abandoned as laparotomy is not associated with an serious danger. The success of surgical treatment depends upon whether or not it is possible to disinvaginate the intestine and on the serosal, and extent of the lesions of the intestinal wall. The general condition must also be taken into consideration. Though resection with immediate restoration of intestinal circulation seems to be the ideal operation, it may be better in the cases of serous in invaginated patients to perform a simpler operation such as entero-anastomosis or even simple enterotomy.

The author has collected 10 cases in which duodenal invagination was done in twenty-seven with recovery in twenty three (90 per cent) extirpation of the

invaginated part in six with recovery in four (66 per cent) resection in sixty with recovery in forty one (66 per cent) anastomosis with or without exclusion in eight with recovery in seven (85 per cent) and section in two stages in three with recovery in two (66 per cent). Therefore of the 104 operations seventy seven were followed by recovery. In seven cases in which operation was not performed there were six deaths. AUDREY G MORGAN M D

Brocq P and Gueulette R Intussusception in the Adult Clinical Types and Roentgenological Study (L'invagination intestinale de l'adulte formes cliniques et étude radiologique) *J de chir* 1926 xxxvii 369

Intussusception in the adult may be ileocaecal (the most common form) ileocolic caecocolic simple double or double recurrent. Two factors necessary for its occurrence are a diminution in the size of the intestine and a disturbance of normal peristaltic movements. In a few cases disinvagination occurs spontaneously but in the majority strangulation results sooner or later. The strangulated intestine may become detached and thrown off but this is rare. If the condition is untreated it tends to go on to obstruction perforation peritonitis and death.

Statistics show that 36 per cent of intussusceptions in the adult are associated with tumor usually a benign tumor of a mobile part of the large bowel. Malignant tumors very rarely cause invagination. Certain inflammatory swellings such as those due to tuberculosis and other conditions such as Meckel's diverticulum and pericolic membrane account for a small percentage of the cases. The authors doubt if acute or chronic appendicitis causes intussusception very often. Small ulcers of the bowel may be a factor. Leriche found lesions in the plexus of Meissner and Auerbach in a case of intussusception. In 50 per cent of the cases the etiology is obscure.

The symptoms are usually not definite. The authors distinguish a chronic and an acute type. A tumor is felt in about 50 per cent of the cases and often this tumor is seen to move about from day to day. At times with an exacerbation of the symptoms it can be felt to become harder. Dance has described a depression in the right iliac fossa due to the absence of the segment of bowel involved in the invagination. The X ray may give very valuable evidence especially in chronic cases. The roentgen picture shows stoppage of the barium along a concave line. The segment of the bowel involved may be invisible or may be traversed by a thin sinuous line of barium.

The treatment is of course surgical. The type of operation depends upon the patient's condition and the possibility of disinvaginating the intestine. The authors favor resection and anastomosis when this type of operation is feasible claiming forty cures in sixty cases treated in this manner.

MICHAEL L MASON M D

Perrotti G The Plastic Use of Free and Pedunculated Flaps of Omentum in Suture of the Intestine (Evoluzione e meccanismo di azione delle plastiche epiploiche e peduncolate in rapporto alle suture intestinali) *Ann ital di chir* 1926 v 1012

The author performed experiments on dogs using free and pedunculated flaps of omentum to cover incisions of the intestine which had been sutured in two layers. In some of the experiments the intestine was only partially severed, whereas in others it was wholly severed.

He found that the free flaps survived only at the place where they were in direct contact with the intestinal mucosa and could obtain the necessary nutrition from the host tissue. The surviving part participated in the process of healing and contributed to the formation of a solid scar, but the peripheral zone of the flap which was not well nourished degenerated. Part of it underwent necrosis and acted like a foreign body causing a reaction in the adjacent peritoneum which led to the formation of adhesions and a certain degree of constriction of the intestine. Pedunculated flaps of omentum which had abundant nutrition of their own took part as a whole in the process of healing contributing to the formation of a more solid scar. They did not become adherent to the neighboring peritoneum or cause any other disturbances. The latter are therefore to be preferred to free flaps.

AUDREY G MORGAN M D

Rieder H Roentgenological and Cinematographic Observations of Organic Stenosis of the Pars Superior of the Duodenum (Roentgenologische und besonders Roentgenkinematographische Beobachtungen bei organischer Stenose der Pars superior duodeni) *Acta radiol* 1926 vii 349

Rieder describes the motor processes in operatively confirmed cases of ulcerous duodenal stenosis. The roentgen examination revealed retention and dilatation of the duodenal bulb and quickly subsiding irregular undulatory movements of the wall of the bulb. The latter were never transmitted backward toward the stomach. There was no rhythmic peristalsis with wave formation such as occurs in the stomach. The peristalsis of the stomach extended only as far as the pylorus and did not pass over into the bulb. The individual phases of the bulb waves varied extraordinarily in their situation, form and magnitude. The author attempts to explain these wave movements. In addition to the movements described, girdle-like contractions were occasionally noted in the center of the bulb, i.e. on the border between the pyloric and the distal bulbous tract. These contractions soon relaxed, whereupon there occurred an active movement of the contents of the bulb and their evacuation in the distal direction.

The motor processes described appeared only after heavy filling of the bulb and ceased after the completion of duodenal digestion.

Christophe, L., and Hartmann, H. Duodeno jejunosomy for Treitz' Hernia (Duodéno jejunosomie pour hernie de Treitz) *Bull et mém Soc nat de chir*, 1926 lvi 1000

The case is reported of a man 37 years of age who had a tumor in the upper part of the abdomen on the left side which was first noticed six weeks previously when the patient was awakened at night by a severe and continuous abdominal pain. In digestion especially for fats, developed five years previously. During the past two years there were alternate periods of diarrhoea and constipation. The slight malaise, the colics, and the occasional vomiting which occurred during constipation ceased when the diarrhoea began. The tumor was the size of an orange, hard, irregular, slightly dull on percussion painful on pressure, and fixed posteriorly but with some lateral movement. In the roentgen examination the colon filled and emptied regularly with barium the splenic flexure was found very high and the hepatic angle slightly lowered. Palpation under the screen showed the swelling to be posterior to and independent of the colon.

At operation performed by Hartmann, a lobulated red tumor under the colon was found at the mesenteric border of the first jejunal loop and adhering to the fourth part of the duodenum. Hartmann considered the swelling to be a retroperitoneal glandular mass and closed the abdomen.

After temporary improvement following the operation the symptoms became more frequent and painful. Digestion was slow and difficult and the patient complained of pain in the left hypochondrium which was most intense immediately after meals. The X ray showed the persistence of a horn-shaped collection of barium in the third part of the duodenum. A second barium meal revealed a gaping pylorus leading into a greatly dilated duodenum. The diameter of the third part of the duodenum was almost that of the stomach. Antiperistaltic waves occurred in the stomach and duodenum. The patient's general condition was very poor. On palpation, the swelling seemed to be semisolid.

At operation, Christophe found a normal liver numerous adhesions between the gall bladder and duodenum, a small stomach, a large gaping pylorus numerous adhesions of the small intestines adhesions of the greater curvature of the stomach to the old operative scar, and numerous intraperitoneal glands. The retroperitoneal tumor was firm and fixed posteriorly. Large glands projected from the surface. Christophe did a duodenojejunosomy. Aspiration of the tumor was negative. Incision into the mass exposed a pocket containing from 50 to 60 ccm of bloody fluid and some white cheesy material. A gland and a piece of the wall were removed for biopsy, a drain was placed to the pocket, and the abdomen closed.

The gland showed chronic inflammation and the wall the structure of normal intestine. Chylous drainage was abundant at first but decreased. Digestion was painless and good the appetite was

excellent and the patient gained 4 lbs., but death resulted from acute edema of the glottis.

At autopsy the duodenojejunosomy was found well united and patent. The retroperitoneal hernial sac was difficult to locate because of adhesions, but was 15 cm long and had the diameter of a loop of small intestine. In certain areas its walls were very thick. The communication of this loop with the duodenum and jejunum respectively admitted the point of a fine button scissors. Microscopically the loop showed some infiltration and chronic inflammation.

According to Hartmann a retroperitoneal hernia in the fossa near the fourth part of the duodenum is rare.

Hartmann reports the case of a man 63 years of age who for a long time had suffered from dyspnoea and vague abdominal pain and ultimately intestinal obstruction. At operation the small intestines were found behind a thin serous membrane. The colon and cecum were flat and pale. From a small orifice near the cæcum a series of distended loops of small intestine could be drawn. The serous covering leaflet was incised until the small intestines appeared to be entirely free. A relatively large transverse vessel was ligated and divided. In exploring from the cæcum along the empty ileum for a short distance Hartmann came upon a red prominence consisting in a loop of small bowel held obstructed by a resistant fibrous fold. This fold was divided. The patient died soon after the operation.

At autopsy the serous covering membrane when resutured showed that nearly all of the small intestines were contained in a retroperitoneal pocket. The duodenum had normal relations. From the right lower part of the sac by a narrow opening, the terminal ileum descended and terminated in a right inguinal hernia. The descending colon was pushed forward. The hernia was prolonged into the pelvic mesocolon to the pelvic fossa. When the hernial sac was emptied of its contents a retroperitoneal pocket of extraordinary size extending below to the pelvic fossa and loosening the leaflets of the pelvic mesocolon was found. The latter was separated into two small compartments by the vessels to the pelvic colon. The sac extended above to the diaphragmatic vault passing in front of the kidney and behind the spleen. On the left the sac lifted the descending colon. The fourth portion of the duodenum was on the right.

According to Hartmann, the total number of cases reported to date is 165. Very often the hernia are found only at autopsy. As a rule operation has been done because of signs of intestinal obstruction.

In the presence of partial intestinal occlusion and tumor there is time for special examinations as in Christophe's case in which duodenal stasis was found. Christophe considers duodenojejunosomy as the operation of choice in retroduodenal hernia which detour the food and fix the intestines, thus preventing the jejunum from being drawn further

into the sac. He believes that an operation which relieves simply the incarceration will not prevent recurrence.

According to Hartmann duodenojejuno-stomy may be done in chronic cases and those in which because of adhesions the hernia is irreducible but it is not the operation of choice for every retro duodenal hernia. The reduction of the incarcerated intestines with closure of the sac is preferable when ever possible. In the treatment of hernia on the right side care is necessary to avoid injuring the superior mesenteric artery which lies on the anterior superior border of the fossa and in the treatment of hernia on the left side care is necessary to avoid injury of the inferior mesenteric vein. In complete acute occlusion relief of the obstruction remains indisputably the operation of choice. Of thirty seven reported cases operation was followed by recovery in nineteen (50 per cent).

WALTER C. BURKET M.D.

**Bonnet P. Occlusion by Meckel's Diverticulum**  
(Occlusion diverticule de Meckel) *Lyon chir* 1926  
cvi 613

A man of 29 years entered the hospital with intense abdominal pain and vomiting and absolute retention of stools and gas. Examination showed distention of the abdomen and absence of peristalsis. The most severe pain was felt a little below the umbilicus. Examination revealed also a small reducible umbilical hernia which was very sensitive on palpation. Appendicitis was excluded by absence of pain in the right iliac fossa and the low temperature and pulse rate. The patient's father had died of tuberculosis and the patient had had attacks of abdominal pain since childhood. These facts suggested the possibility of occlusion by a band or an adhesion due to an old tuberculous peritonitis. Rectal palpation combined with hypogastric palpation gave the impression of distended loops of small intestine and elicited a splashing sound. The condition was believed to be a localized occlusion of the small intestine probably by a band.

Operation showed some of the loops of small intestine strangulated under a red cord resembling an intestine without a mesentery. The latter proved to be a Meckel's diverticulum 15 cm. long which was firmly adherent in the retro mesenteric fossa to the posterior abdominal wall. The cord was cut between two ligatures with the thermocautery. Near its prietal insertion it had no lumen. The diverticulum was resected at its insertion into the intestine and the wound drained. Uneventful recovery followed.

Two points of interest in this case were the strangulation of the small intestine by a fixed diverticulum which with the mesenteric cord stretched behind it formed an unyielding band and the existence of the malformation in the umbilical region which the author thinks is an important diagnostic sign in such a case.

AUDREY G. MORGAN M.D.

**Lavesson H. Studies on So Called Ileocaecal Invagination** (Studien ueber die sogenannte Invagination ileocaecalis) *Acta chirug Scand* 1926  
lvi 48

The author describes the following forms of intussusception occurring in the ileocaecal region.

1. Caecal invagination—invagination of the caecum only a caeco-caecal invagination or of the caecum into the colon a caecocolic invagination the ileum remaining in its usual place.

2. Caeco ileocolic invagination a further development of the caecal invagination the ileum being drawn up into the colon.

3. Ileocolic invagination an invagination of the ileum into the colon with the caecum remaining in its place.

4. An ileocaecocolic invagination a further development of 3 in which the caecum is drawn up into the colon.

Of these various forms the caeco ileocolic invagination is by far the most common. Of twenty four cases of intussusception observed at the Trelleborg Municipal Hospital eighteen were of this type. The purely caecal type occurred in five cases where as only one case of the ileocaecocolic variety was observed. There was no case of ileocolic intussusception.

From his own observations the author concludes that the most common cause of the invagination is oedematous inflammatory changes in the mucous membrane. The frequency of such changes in the caecum is due to the structure and shape of this portion of the intestine and its greater bacterial content as compared with the ileum. The inflammatory oedema varies considerably sometimes leading to such marked swelling of the intestinal wall as to simulate a tumor. In other cases the changes are less pronounced being confined to one or several haustra.

The author deals with the symptoms in the different forms of intussusception and the possibilities of establishing the diagnosis.

Although admitting that excellent results may be obtained by non operative treatment, he is of the opinion that with the present improved surgical technique the condition should be treated surgically. In the twenty four cases reviewed all of which were operated upon a permanent cure was obtained.

**Hurst A. F. The Diagnosis and Treatment of Colitis** *Lancet* 1926 cxi 1151

No diagnosis is made with greater frequency and with less justification than that of colitis. The diagnosis of colitis should never be made until a thorough investigation has shown that inflammation of the colon alone is present.

The presence of mucus is not indicative of colitis. Repeated sigmoidoscopic examination of patients passing large amounts of mucus have failed to show the slightest sign of inflammation. In true colitis the mucus always contains pus cells. The presence of visible blood indicates ulcerations.

There can be no doubt that colitis is almost always due to infection, but it is rarely possible to tell in a given case what organism is responsible for the disease.

It is no more justifiable to treat colitis without a sigmoidal examination than to treat tonsillitis without looking into the throat. The sigmoidoscope can be passed easily with the patient in the knee elbow position. If the mucous membrane of the rectum and pelvic colon is healthy, ulcerative colitis can be excluded immediately as the disease starts and persists in the distal segment of the colon. When a patient passing blood and pus in the stools shows no evidence of ulcerative colitis on sigmoidoscopic examination a growth of the colon is almost certain to be present. If the growth is within 12 in. of the anus it should be recognized though it cannot be palpated.

Roentgenological evidence of colitis is variable and a diagnosis made from the X ray plate without other confirmation is unreliable. An X ray examination should always be made in long standing cases which are not responding to treatment. It may reveal diverticulitis, ulceration, or stricture.

Strictures and polypi are occasional complications, but following improved methods of treatment complete healing results in the majority of cases.

In the treatment of colitis the patient should be kept in bed until the sigmoidoscope shows complete recovery. A generous mixed diet from which all solid residue has been removed should be given. Fresh air and sunlight help to improve the general condition.

A polyvalent antidyenteria serum is often very beneficial.

Local treatments are of value. The author usually employs tannic acid, from 1 to 2 gr. to the oz. There is no evidence that so called intestinal antiseptics exert any influence. Saline aperients or paraffin should be used to keep the stools soft.

Surgery is indicated only in dealing with the complications, but in extremely refractory cases appendicostomy may be done.

WILLIAM E. SHACKLETON, M.D.

**Nordmann.** The Development of Surgery of the Colon in the Last Twenty Five Years (Entwicklung der Dickdarmchirurgie in den letzten 25 Jahren). 50 Tag d. deutsch. Ges. f. Chir. Berlin 1926.

The diagnosis of colonic ailments has been advanced by the X ray. X ray examination has shown, as was previously determined clinically, that besides the normal peristalsis there is an antiperistalsis and that the colonic contents do not pass through newly created anastomoses but are carried along the old route by physiological peristalsis. Anastomosis is therefore practical only in the presence of an impassable stenosis. Surgical treatment of dynamic obstruction is of little avail. Finsterer has reported good results in obstinate obstruction from resection of the descending colon, but in Nordmann's opinion this is too dangerous. Payr also warns against sur-

gical interference as long as there is no certain differentiation between dynamic and mechanical forms of obstruction.

Congenital abnormalities of the colon include total and partial atresia, congenital stenoses and malformations due to arrest of development. In such conditions the operative procedure should be as simple as possible, viz. the formation of an intestinal fistula central to the atresia or stenosis.

Abnormal dilatation and marked motility of the cæcum do not require surgical interference. They occur so frequently that they cannot be regarded as pathological. Torsion of the cæcum, however, should be operated upon as soon as possible. If the bowel is still viable it is sufficient to untwist it and fix it in the normal position. In gangrene of the cæcum the cæcum and ascending colon should be resected.

Jackson's membrane, the ligamenta variformia and double splenic flexure are due to developmental disturbances in embryonic life. They require surgical interference only when the X ray shows that they are causing obstruction or interfere with colonic movements. These complications, however, seem to be very rare. Nordmann warns against operative procedures on these membranes, especially resection of the ascending colon, when the symptoms are vague.

Megacolon, a congenital condition, first causes definite disturbances when there is kinking and obstruction at the root of the efferent loop. Associated enlargement of the urinary bladder is also the result of a disturbance of embryonic development. The surgical treatment of megacolon depends upon the patient's general condition and age and the anatomical findings. In all cases the enlarged colon must first be emptied. If enemas are not sufficient a cæcostomy is necessary. The latter is preferable to the formation of an artificial anus in the megacolon. In uncomplicated cases in which the general condition is good the one stage resection is the method of choice provided the large loops have been successfully emptied. In the cases of small children with extensive filling of the megacolon, the cases of weak and sick patients and cases with volvulus at the flexure the several stage resection is preferable.

Diverticulitis of the colon is more common than has been thought. It occurs more frequently in obese than thin persons and causes pain similar to that of appendicitis on the left side. The rupture of a diverticulum into the bladder is not rare. In such cases the differentiation of the condition from carcinoma is difficult even with the aid of the X ray. In uncomplicated cases a one stage resection is indicated but in complicated cases especially those with rupture into the bladder the formation of an artificial anus is necessary. The unfavorable prognosis can be improved only by early diagnosis.

Isolated ulcers of the colon are very rare. They occur most frequently in the ascending colon. They are usually first diagnosed when they perforate.

into the sac. He believes that an operation which relieves simply the incarceration will not prevent recurrence.

According to Hartmann duodenojejuno-stomy may be done in chronic cases and those in which because of adhesions the hernia is irreducible but it is not the operation of choice for every retro-duodenal hernia. The reduction of the incarcerated intestines with closure of the sac is preferable when ever possible. In the treatment of hernia on the right side care is necessary to avoid injuring the superior mesenteric artery which lies on the anterior superior border of the fossa and in the treatment of hernia on the left side care is necessary to avoid injury of the inferior mesenteric vein. In complete acute occlusion relief of the obstruction remains indisputably the operation of choice. Of thirty seven reported cases operation was followed by recovery in nineteen (50 per cent).

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resection, they should be resected before the suturing is begun. It is best to make a double row of interrupted sutures and protect the suture line with omentum.

The end to end anastomosis is preferable to lateral union because of the danger in the latter of a blind sac. Drainage and tamponade is dangerous and superfluous.

In the two stage resection the spur should be as short as possible. The procedure of Payr is usually best.

In the formation of an artificial anus it is desirable to pull the colon through the separated fibers of the rectus muscle as this gives some degree of control over the artificial anus. In the closure of an artificial anus or a fecal fistula the surgeon should not hesitate to open the abdominal cavity as this will allow a more careful suture of the bowel. The old skin plastics should be abandoned.

In the discussion of this paper, BRUENING (Lichterfelde) reported two cases of megacolon. The first was that of a newborn infant with what was at first believed to be atresia. The true nature of the condition was revealed by the X ray. Digestion was improved by daily enemas. The second case was that of an 8 year-old boy with marked dilatation of the entire colon. Because of increasing pain, a total resection of the entire colon was done with lateral anastomosis between the lowest part of the ileum and the rectum. The operation was well tolerated, but the patient died four weeks later of a phlegmon of the floor of the mouth which probably had some relation to it. Both cases demonstrated the congenital nature of the condition and supported Bruening's hypothesis that the cause of the giant growth of the colon is trophic dysfunction consequent upon an abnormal anlage of the segmental vegetative centers in the spinal cord.

Besides this congenital megacolon with dilatation of the entire colon including the cæcum and appendix, there is an acquired megasigmoid which is brought about by mechanical hindrances such as valve formation, kinks, abnormal loop formation, shrinkage of the mesocolon, scar tissue and spastic conditions and is usually limited to the sigmoid only occasionally involving the descending colon. Whereas this condition may be cured by a partial operation, true Hirschsprung's disease requires total resection.

STEINTHAL (Stuttgart) discussed the pathogenesis and operative treatment of megacolon. He agrees with Nordmann on the subject. He reported the case of a 30-year-old patient who since childhood, had had an enlargement of the colon extending from the sigmoid to the ascending colon and to the rectum. On account of the increasing pain, a several stage resection was done. Because of the extent of the condition, this case refutes the neurogenic theory of Bruening. Moreover, since after the formation of the artificial anus the irrigation fluid passed not only from the rectum to the artificial anus but also in the opposite direction, it refutes also the mechanical

theory favored by Koenig and the view of Perthes that there is a valve formation at the root of the sigmoid flexure. X ray examination made after the administration of bismuth by mouth showed, at the transition of the distal loop of the sigmoid flexure into the rectum a kink which was not seen in the first examination with the barium enema. Steintal attributed the kink to the sinking of the heavy flexure into the small pelvis. He believes this to have been a case of congenital megacolon causing increasing difficulty with the lapse of time.

KLEINSCHMIDT (Leipzig) discussed the etiology of megacolon. He called attention to the fact that there are three nerve tracts to the lower portion of the colon: (1) the autonomic system, which is located in the intestinal wall, (2) the vegetative (sympathetic and parasympathetic) system and (3) the spinal nerve system. He described briefly the complicated act of defecation. In the dog there is a special nerve, the nervus pelvinus, which supplies the lower part of the large intestine. Section of this nerve is followed by dilatation and obstruction of the loops it supplies, this is demonstrable with the X ray. In man, the nerve corresponding to the nervus pelvinus is the ramus colicus of the sacral nerve. In one case of Hirschsprung's disease Kleinschmidt was able to demonstrate deficiency of this branch.

BUDDE (Cologne) stated that in his opinion stenoses of the intestinal tract are usually due to strangulation and volvulus during embryonic development. In most cases the intestine is able to untwist itself spontaneously, but in others it is not. Budde reported a case in which the entire first part of the colon was involved, the occlusion extending up to the flexure. The cæcum was found high under the liver. The colon was twisted on its long axis. Budde agrees with Nordmann that the treatment of these atresias and stenoses should be as conservative as possible. As the condition is often fatal after the formation of a fistula, an attempt should be made to effect an anastomosis. Budde reported two cases.

KEYSSER (Lichterfelde) discussed the one stage resection. He claimed that the chief dangers are the suturing of the colon to the colon and the frequently unavoidable tension. He has therefore attempted to unite the colon with the small intestine with a lateral anastomosis which, because of the dangers of the multiple stage operation, he does in a one stage. Keysser has resected in this manner (ileo colonic resection) tumors of the splenic flexure and the upper part of the descending colon as well as those of the ascending colon. When the omentum is invaded it is resected with the tumor. The operations were done for the most part under local anesthesia (infiltration of the celiac ganglion and the mesocolon). In two cases of ileus due to carcinoma he performed the operation in one stage. In cases with stasis in the small intestine or a beginning peritonitis, an artificial anus must be made. In eight cases operated upon in this way there was



only one death that of a patient who died of pneumonia on the sixth day after the operation. There were no disturbances of the intestinal tract. Extensive resection is followed by diarrhoea but this ceases after three or four months.

MELZNER (Koenigsberg) discussed end to end versus lateral anastomosis of the bowel. In experiments on animals the function of the two types of anastomosis was observed in the open abdominal cavity after stimulation of the peristalsis by the local application of 10 per cent barium chloride solution. In the lateral anastomosis the ring shaped wave of contraction was absent from the entire area of anastomosis whereas in the end to end anastomosis the peristalsis was completely normal clear up to the point of union. Melzner attributes the difference to the fact that in the lateral anastomosis the circular fibers are severed and thus are thrown out of function whereas in the end to end anastomosis they remain intact. On the same grounds end to end anastomosis is preferable to side to side anastomosis.

HARTERT (Neustrelitz) stated that for the treatment of volvulus of the sigmoid flexure colopexy is no longer in favor since in spite of very careful fixation recurrence develops relatively frequently and on re operation it is found that the fixation is entirely loosened or the adhesions between the loop and the abdominal wall have been drawn out giving the loop sufficient mobility for retwisting. Since the other conservative methods may also be followed by recurrence resection is becoming more and more the procedure of choice for all cases of volvulus. Hartert believes that this is going too far. The danger of primary resection of the colon is out of proportion to the simplicity of the conditions in uncomplicated volvulus. Detorsion avoids every immediate danger and in a large percentage of cases results in an apparently permanent cure. The harmless colopexy will come more into favor in such cases when its certainty will have been increased. Its results are greatly improved by fixation of the loop with living tissue analogous to the procedure of Perthes in which the ligamentum teres of the liver is employed to support a ptosed stomach. In one of his cases Hartert used the following procedure.

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Three months after the operation the loop was still in position.

Colopexy is contra indicated in cases with gangrene and in protracted cases with overloading of the rest of the bowel.

FISCHER discussed the results of the surgical treatment of colitis. The etiology of this condition is variable. Fischer is opposed to irrigation methods and the Witzel fistula. In this condition there are anatomical borders formed by epithelial regeneration and the formation of scars which interfere with function. Fischer studied these borders in animals. Scars in the submucosa make of the bowel a dead tube. In the presence of confluent ulcers larger than a mark the surgeon should not hesitate to perform a resection but this stage should be prevented by early care. Fischer does not agree with Nordmann that acute colitis should never be treated by the formation of a fistula. He believes with Hochenegg that such treatment is warranted in severe cases. With regard to cancer Fischer stated that he does not depend entirely on the X ray for the diagnosis as roentgen examination gives four times as many negative as positive results. With regard to the innervation of the lower colon described by Kleinschmidt he stated that after resection of the rectum defecation often ceases and faeces remain in the colon. This may well be explained by an injury to the ramus colicus.

KAUSCH (Berlin) reported that he prefers lateral anastomosis with the smallest possible blind sac. In complicated cases he draws the bowel out at the site of the volvulus or megacolon. In his opinion it is not necessary to resect the entire colon in megacolon.

FINSTERER (Vienna) agrees with Nordmann that colon resection is not without danger but he believes also that entero anastomosis is no less dangerous. The chief essential is evacuation of the bowel to remove the toxins before operation. If this is successful resection may be performed even on old persons. Finsterer favors a very broad (10 cm.) lateral anastomosis. The blind sac should be as small as possible.

BREWITT (Luebeck) discussed methods for the closure of an artificial anus. The newer methods depend upon the formation of a Sauerbruch canal through which closure is effected by the introduction of an instrument. The pressure produced in such methods may result in an intestinal fistula. In the method used by Brewitt the attempt is made to prevent this complication. The transverse colon is pulled out through an incision under the rib margin and covered by a skin flap. This portion of bowel covered with skin is then held closed by pressing it up against the rib margin by a pad. The pad is removed for one hour every day to permit bowel movements. Healing occurs in ten days during which time opium is administered to place the bowel at rest.

VON BECK (Karlsruhe) has attempted complete colon resection in fifty four cases. He found that in some cases lateral anastomosis was followed by pain due to antiperistalsis whereas end to end anasto-

mosis had no painful sequelæ. In resection he has not sutured up the blind end but has brought it out externally. In ten cases of ulcerative colitis he performed extensive resections, in some instances in three stages. There were only two deaths. In many of the cases the condition developed during an epidemic of dysentery.

ANSCHUTZ (Kiel) stated that in his opinion too much resection is being done in megacolon. The primary dilatation usually occurs in the sigmoid, the dilatation of the rest of the colon being secondary. Consequently it is sufficient to resect only the sigmoid. This he did in the cases of seven children under 5 years of age. In volvulus he has tried exteriorization with variable results. These cases must be individualized, operation sometimes being performed in one stage and sometimes in several stages. In general, primary resection is best, but in difficult cases fixation is justified. Anschutz has seen very difficult cases of chronic colitis following dysentery. He is accustomed to making a very high lying anus. He often performs an exploratory operation to determine the condition of the bowel. He recalls tumor like formations which were due to tricocephalus. In acute colitis he has saved a few lives by operation, but has also lost many cases.

KOERTE reported a case of chronic colitis in which he established his enteric fistula. The patient now feels so well that he will not permit closure of the fistula.

ORTH (Hamburg) emphasized the importance of the X ray in revealing the extent of intestinal tuberculosis and as an aid in the diagnosis of ulcerative colitis. He warned that in intestinal tuberculosis ileosigmoidostomy may be followed by a fatal diarrhoea.

PERTHES (Tuebingen) stated that he has operated on only three cases of megacolon since 1914. All of the operations were one stage resections and resulted in a cure. In one case of severe habitual obstipation he removed the left half of the colon including a large part of the flexure. He considers it essential to leave part of the colon. Of late he has been using copious irrigations of water to empty the bowel.

PENDL (Troppau) reported that he is in favor of giving castor oil the day after a colon operation. He has performed colon resection in forty two cases with only two deaths. One death was due to the performance of the operation in the absence of the proper indications and the other to the removal of a myoma at the time of the colon resection.

REICHEL (Chemnitz) stated that in the absence of complications and fecal stasis colonic tumors may be removed in one stage but such favorable conditions are not found frequently. The chief danger lies in failure of the sutures due to the impaction of feces. A one stage operation is usually possible on the right side because in the right colon the feces are more fluid. Of twenty five resections for carcinoma of the sigmoid flexure Reichel was able to do only six in one stage. His total mortality

for colectomy is 22 per cent. In his cases of carcinoma of the flexure the mortality of several stage resection was 15.8 per cent.

PAYR (Leipzig) recommended for cleansing of the bowel for X ray work pre operative and post operative care of the colon, and the treatment of chronic obstipation the irrigating apparatus which has been used by him with very good results since 1911. For cases of obstruction due to mechanical causes operative interference is necessary for permanent results. Payr reported a case of gradually increasing stenosis at the flexure with menstruation through the rectum. The occurrence of an injury during a dilatation of the cervix performed some time previously was improbable. The X ray showed marked adhesions and torsion of the sigmoid flexure above the rectum. Operation revealed in addition a broad band like adhesion between the fundus of the uterus and the sigmoid fresh inflammatory adhesions, and a tumor in the bowel wall. Payr established an artificial anus with the intention of performing a resection later. He asked if similar cases of menstruation through the rectum were known. The studies of Schmieden suggested the possibility in this case of a hidden papilloma since on one occasion a necrotic piece of tissue with a glandular structure was expelled.

VON HOFFMEISTER (Stuttgart) described a common type of case which begins with a sudden passage of feces followed by obstipation and in which the X ray shows stagnation but no stenosis and the bowel movements are interfered with by a membrane formation. The treatment in such a case is division of the membrane or the establishment of an anastomosis between the jejunum and the transverse colon.

HUEBENER reported a case of injury of the colon in which a piece of tissue 15 cm. long containing mucosa and submucosa was removed. An artificial anus was then formed and later was closed. A cure resulted.

In conclusion Nordmann stated that operation is rarely indicated in acute colitis. In contrast to Finsterer he believes that resection is a more formidable procedure than anastomosis. He would hesitate to give castor oil immediately after the operation as recommended by Pendl. He believes that the condition in Payr's case was a sigmoiditis and that a perforation occurring in the dilatation of the cervix was the cause. He emphasized the importance of receiving cases in the uncomplicated stage when a one stage operation is possible.

STETTNER (Z)

Livingston E. M. The Skin Triangle of Appendicitis. A Discussion of Its Significance and Its Diagnostic Value as Observed in More than 400 Cases of Acute Appendicitis. *Arch Surg* 1926 **XXII** 630.

The most reliable single diagnostic sign of acute appendicitis is cutaneous hyperæsthesia in the skin triangle. This was noted in 86 per cent of 428

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sphincteric fibers in the surrounding tissues, there may be no symptoms at any age. When the opening is small, symptoms consisting chiefly in constipation, colic vomiting, tympanites and sometimes obstruction, appear early. In old cases there may be enormous distention of the large bowel and rectum. While the physical suffering is of chief importance, the mental anguish in these cases is also considerable.

For immediate treatment in the newborn infant the author recommends simple dilatation with no further measures until the age of puberty. Operation thereafter offers much in the way of relief.

After discussing the various operative procedures heretofore used, the author reports a case and describes the method used by him in the correction of the defect in this instance. An incision through the skin and superficial tissue was made from the fourchette to the tip of the coccyx and a circular incision outside the rectovaginal opening. Then, after dissection of the posterior vaginal wall, the entire fistulous tract connecting the vagina and rectum was freed, a passage was made with a hæmostat from the normal anal site to the juncture of the fistulous tract and the rectum, and the vaginal opening of the tract then carried down through this muscular tunnel to the site of a normal anus where the new opening was fixed to the skin edges. All defects were then closed and the raw edges approximated as in perineorrhaphy.

The procedure described seems to offer a simple means of correcting atresia ani vaginalis for the following reasons:

- 1 The avoidance of extensive cutting tends to lessen scar tissue formation and contraction with narrowing of the anal canal.
- 2 The use of the fistulous tract for the anal outlet renders the procedure simple and practical.
- 3 The utilization of the apparently normal sphincter results in entirely satisfactory control.
- 4 The development of normal sphincteric support materially lessens the chance of rectal prolapse.

JACOB M. MORA, M.D.

functional tests designed to measure hepatic ab normality must be of limited value

Combined with other tests the Rosenthal tetrachlorophthalein test has proved of distinct value though in some instances it has a toxic effect The authors believe that bromsulphalein is far less toxic than tetrachlorophthalein and gives equally reliable results in the determination of hepatic function

WILLIAM E. SHACKLETON M D

**Mateer J G and Henderson W S Chronic Biliary Tract Disease The Diagnostic Criteria**  
*Arch Int Med* 1926 **xxviii** 708

A careful analysis of the diagnostic data in relation to the pathological findings in ninety four consecutive cases of proved gall tract disease shows the great importance of the clinical findings in furnishing evidence of pathological morphology of the gall tract In forty one of these cases gall stones were present In thirty six (with or without calculi) there was chronic cholecystitis with pericystic adhesions In fifty three there was chronic cholecystitis without stones or adhesions

Chronic interstitial hepatitis and chronic cholangitis with dilatation of the larger extrahepatic bile ducts was found associated with chronic gall tract disease

The symptoms indicative of gall tract disease are classified into four groups (1) anorexia asthenia and loss of weight (2) arthritis myositis and neuritis (3) belching bloating heartburn nausea and vomiting and (4) localizing symptoms particularly characteristic pain

Physical examination aided greatly in the differential diagnosis The most valuable sign was definite tenderness in the gall bladder region on palpation upward under the right costal margin Examination in the sitting position frequently aided in differentiating cholecystitis

Cholecystography afforded reliable information in 96 per cent of the cases The oral administration of the dye has proved unobjectionable and reliable in practically all cases Biliary drainage afforded important evidence of chronic cholangitis and bilirubin determinations revealed liver involvement

WILLIAM E. SHACKLETON M D

**Denton J The Mode of Origin of Gall Bladder Lesions**  
*Arch Surg* 19 **xiv** 1

This study of gall bladder lesions was undertaken to determine by what processes some of the commonly observed lesions and pathological states of the gall bladder are produced It was thought at first that a correlation of bacteriological and histological findings in the gall bladder would give this information but bacteria were often cultivated from gall bladders that showed no lesions and obviously pathological gall bladders often yielded negative cultures Much more valuable information was obtained from a study of the clinical histories operation notes of surgeons and the gross and histological condition of the gall bladder

A review of the clinical histories and operation notes revealed that recent and extensive changes in the gall bladder were almost always accompanied by severe pain Acute lesions were frequently not accompanied by a febrile reaction or an important increase in the leucocyte count In cases of impaction of a stone in the cystic duct recent and extensive changes were usually found in the gall bladder whereas impaction of a stone in the common duct was usually not associated with extensive gall bladder changes

A comparison of the gross and microscopic changes in the gall bladder in cases in which cholecystectomy was performed within two or three days after the impaction of a stone in the cystic duct made it clear that the primary lesions in the gall bladder were intramural oedema venous distention and an intramural haemorrhage or intramural hematoma

As it was impossible to demonstrate lesions that were primarily of bacterial origin Denton is of the opinion that other factors than bacterial infection are necessary for the explanation of some of the commonly observed lesions of the gall bladder

He regards the terms acute 'subacute and chronic cholecystitis as undesirable because they suggest an infectious origin of the condition Pathological states of the gall bladder he believes should be described in morphological terms such as oedema oedema and hemorrhage hematoma partial infarction complete infarction oedematous cicatrix and cicatrix

ARTHUR L. SHREFFLER M D

**Bérard and Mallet Guy The Syndrome of Lithiasis of the Gall Bladder Due to Chronic Inflammation of the Pancreas (Syndrome vésiculaire pseudo lithiasique lié sans doute à l'évolution d'une inflammation chronique du pancréas)**  
*Lyon chir* 1906 **xviii** 633

Sometimes symptoms of gall stones are due to chronic cholecystitis without lithiasis but in some cases with such symptoms no signs of inflammation of the gall bladder can be found The authors report a case of the latter type in a woman of 24 years who at first complained of rather vague intestinal symptoms but finally developed distinct attacks of gall stone colic which led to the performance of a cholecystostomy Examination through the duodenal sound showed a disturbance in bile secretion and normal flow of bile could not be brought about by the method of Meltzer and Lyon Duodenal examination demonstrated also defective internal secretion of the pancreas Roentgen examination of the duodenum did not show any deformity

A study of the gall bladder fistula by roentgenography with the use of lipiodol showed that the gall bladder was still large and that there was a stenosis of the entire pancreatic part of the common duct The authors believe that this method of examination gives as valuable information with regard to the bile tract as is given by pyelography with regard to kidney excretion In the case

reported the findings of this examination and the fact that the symptoms disappeared while the gall bladder fistula was open and reappeared when the fistula closed up led them to perform a cholecysto-gastrostomy. Clinical and roentgen examination of the anastomosis showed that the bile was being excreted solely through the new opening and not by the natural route. This fact shows that there must have been some obstacle to the normal discharge of the bile.

The authors think the obstacle was the stenosis of the pancreatic part of the common duct by the chronic inflammation of the pancreas. They have been unable to determine the cause of the chronic pancreatitis and are unable to say what the outcome will be as persistence of the inflammation is indicated by continued lumbar pain which is one of the cardinal symptoms of chronic pancreatitis.

AUDREY G. MORGAN, M.D.

**Counselor V. S., and McIndoe A. H.** Dilatation of the Bile Ducts (Hydrohepatosis). *Surg. Gynec. & Obst.* 1926 xlii 729

The biliary tree of various types of the liver of man was examined by the celloidin injection and corrosion method in twenty six cases.

In ten normal livers the common hepatic ducts were found not to exceed 5 mm. in internal diameter, while the succeeding branches diminished in size to 0.5 mm. in the fifth order.

Of eight livers from cases in which the gall bladder contained unsuspected stones, a general enlargement of the ducts was found in seven. The dilatation in the common hepatic duct was between 6.5 and 11.5 mm. The dilatation was greater when the associated damage to the gall bladder was more severe. In the case with no dilatation the gall bladder contained three small stones but was otherwise apparently normal.

Dilatation occurred in the liver in all of three cases in which cholecystectomy had been performed for cholecystitis with stones eight, nine and ten days previous to death but was least marked in a case in which an internal fistula between the gall bladder and colon was found at operation.

In five cases of benign or malignant stricture of the common ducts the amount of dilatation was very extensive ranging from 10 to 30 mm. in the common hepatic duct. The process extended throughout the whole biliary tree grossly as far as the fifth order of branches. The more complete the stricture and the longer its duration the further out the extreme change occurred and the more abrupt the transition from dilated branches to terminal filaments.

Attention is called to the atrophy of the hepatic parenchyma resulting from the pressure of the enlarged ducts, the obstruction to the portal venous flow from lateral biliary pressure and the rapidity of infection from stasis.

The term 'hydrohepatosis' adequately describes the condition.

**Brule.** Intermittent Icterus in Calcareous or Cancerous Obstructions of the Common Bile Duct (Les ictères intermittents dans les obstructions calculeuses ou cancéreuses du canal cholédoque). *Bull. et mem. Soc. méd. d. hôp. de Par.* 1926 xlii 1497

To differentiate the icterus of chronic hepatitis from that of obstruction of the common bile duct is often difficult. To distinguish a stone in the common duct from a cancer of the pancreas or the choledochus is clinically still more difficult. So many cases show such anomalies in the symptoms or the clinical evolution that an exploratory laparotomy is unhesitatingly advised to verify the condition of the common duct. Theoretically, an obstruction from either a stone or a neoplasm of the common duct should cause an intense continuous icterus because the obstruction is permanent yet the icterus due to stone varies more than that due to cancer. This variability is relative and based on a continuous icterus with exacerbations due to attacks of more marked biliary retention. Often an important obstacle at the common duct causes only slight icterus which is purely urobilinuric and without true biliary or urinary pigments because the bilirubin retention in the blood is not high enough to pass the excretory threshold. In the icterus of hepatitis urobilinuria is especially noted. At times, although the obstruction in the common duct remains, the bile retention becomes still less and may even disappear completely. Such a condition is paradoxical—permanent obstruction of the common duct with an intermittent icterus—and often leads to the delay of surgical intervention which would effect a definite cure if the obstruction is a stone. Brule considers such cases not very unusual. He reports four with permanent obstruction of the common duct and attacks of deep intermittent jaundice lasting three or four days.

Calcareous obstruction depends on two mechanical factors—the size of the stone and the caliber of the duct. A tiny stone may block a normal duct on the other hand the choledochus may dilate to the caliber of the small intestine. The stone whatever its size, will not completely obliterate the canal, the bile will flow around it. Common duct stones without icterus are not exceptional, as is well known. The additional factor of inflammation is necessary to complete the obstruction. Irritated by a stone the choledochus the lower end of which is usually septic develops inflammatory attacks with swelling of the mucosa causing obstruction around the stone. Brule considers the inflammation localized to the choledochus and not to the small bile ducts, i.e. a choledochitis rather than an angiocholitis. In his two cases of stone the attacks were associated with fever but not with a painful liver as in angiocholitis. When the infection and swelling subside the biliary retention clears suddenly in hepatic cell lesions the jaundice regresses gradually. The intensity and frequency of the secondary infection regulates the appearance of attacks of biliary retention.

Two of the author's cases were cases of cancer of the pancreas. The intermittent biliary obstruction is singularly more abnormal in pancreatic cancer. Theoretically this condition should be associated with a permanently progressive icterus. To explain the intermittent jaundice the same factors are necessary as in stone: (1) incomplete obstruction by the cancer and (2) attacks of inflammatory swelling of the choledochus at the level of the cancer set up by the irritation from the growth.

An important finding in the four cases which facilitated the diagnosis of common duct obstruction was the accordion liver action. At each attack of biliary retention the liver was hypertrophied, smooth of normal consistency and painless or only slightly painful to deep pressure. When the biliary retention yielded the liver resumed its normal size or diminished considerably. This hepatomegaly is clearly differentiated from the chronic hepatomegaly of primary liver disease. The hepatomegaly which varies with the icterus is of true diagnostic value and points strongly to obstruction of the principal bile passages. At autopsy such an enlarged liver is gorged with bile and the dilated bile ducts form veritable cavities.

WALTER C. BLACKETT, M.D.

**Diaz G. L. and Duval P.** Adenoma of the Hepatic Duct with Chronic Obstructive Icterus. Removal of the Tumor and Repair of the Hepatic Duct by a Flap from the Cystic Duct. Cure (Adénome du canal hépatique, icterus chronique par rétention, ablation de la tumeur, reconstitution de la voie biliaire principale par un lambeau du cystique guéri). *Bull. et mém. Soc. nat. de chir.* 1906, 11, 1053.

The patient whose case is reported was operated upon for supposed calculus of the common duct.

The junction of the cystic and hepatic ducts a 9.6 per cent. of its longest diameter was found of the dye has proved useful in enucleate the tumor as in practically all cases of hepatic duct immediately important evidence of duct. Therefore following bilirubin determination, partial resection of the hepatic duct and the adjacent

**Denton J.** The cystic duct was done. The Lesions of the hepatic duct was then repaired with

This study of the remains of the cystic duct a to determine being left for the passage of a drain

ly observed proved to be an adenoma. This was bladder are p have arisen in the pseudo glandular correlation of rmally found in the walls of the bile in the gall bl

bacteria were D Acute pancreatitis *Brit. J. Surg.* gall bladders 390

more valuable study of the surgeons and the gall bladder etatits while an uncommon disease most serious conditions occurring in In reviewing twenty one cases the average age of the patients to be

50 years. The condition is more common in females than males.

Pathologically it is found that the pancreas is the site of an inflammatory swelling which becomes tense and presses on the coeliac plexus. This explains the acute nature of the pain and the severe accompanying shock. The swelling is followed by an effusion into the lesser sac of the peritoneum which later suppurates and accounts for the fullness or swelling in the upper abdomen. The exudate finally finds its way through the foramen of Winslow and general involvement of the peritoneum results. Scattered throughout the abdomen and elsewhere there are areas in which the pancreatic lipase liberated has saponified the neutral fats.

The infection may be due to the regurgitation of infected bile into the pancreas, lymphatic infection from the gall bladder, infection from the common duct or foci of infection elsewhere.

The author believes that there is often an infection of the gall bladder in acute pancreatitis and that this infection can travel to the pancreas by way of the lymphatics. Regurgitation of bile into the pancreas is not common, being usually prevented by a valve in the pancreatic duct.

Acute pancreatitis is characterized by the severity and acuteness of the onset of symptoms. Two important diagnostic signs are marked cyanosis, probably due to the presence of a septicæmia and discoloration in the flank due to a direct retroperitoneal digestion by the pancreatic ferments.

The treatment is surgical, free drainage of the peritoneal cavity is indicated. The author believes that the gall bladder should be drained in addition to the lesser sac. It may be possible to drain the lesser sac by a posterior incision, resecting a portion of the tenth rib in the mid axillary line. The drainage tube should be removed as soon as possible to prevent the formation of a permanent pancreatic fistula, but if it is removed too early and the wound is allowed to heal a pancreatic cyst is liable to develop. It is unsafe to remove the tube until the discharge has become small in amount.

From the tenth to the fourteenth day during convalescence when the sloughs are separating there is danger of secondary hæmorrhage. Drainage may be interfered with at this time with a resulting return of the symptoms.

It is possible for recovery to result under medical treatment, but surgery has a lower mortality rate.

CYRIL J. GLASPEL, M.D.

**Quenu J.** The Diagnosis and Treatment of Traumatic Rupture of the Spleen (Diagnostic et traitement des ruptures traumatiques de la rate avec hémorrhagie en péritoine libre). *J. de chir.* 1926, LVIII, 393.

A favorable prognosis in rupture of the spleen depends upon early recognition of the condition and prompt intervention. The diagnosis of rupture of the spleen is based on the circumstances of the accident, usually a rather severe trauma to the left

## MISCELLANEOUS

**hypochondrium** The malarial spleen and the spleen affected by various diseases such as thyroid, pneumonia, tuberculosis, etc. is very liable to rupture even with moderate trauma. There is a state of shock often with an initial syncope. The author says, "Delayed syncope following an abdominal trauma by several minutes hours, or days especially if the trauma was sustained in the left hypochondrium, is an almost pathognomonic sign of rupture of the spleen, it means that the injured spleen begins again to bleed, and constitutes, to my mind, a formal indication for operation."

Pain is an important symptom, especially so if it is intermittent. It is located most frequently in the left hypochondrium, but in 10 per cent of the cases occurs in the left shoulder. Rigidity in the left upper quadrant is probably the most valuable sign. In some cases, however, rigidity may be generalized or absent. Dulness is also an important sign but is often absent because of meteorism. Acceleration of the pulse, even when moderate, is an indication for operation, but its absence does not justify delay.

The temperature is subnormal at first but soon rises and tends to remain around 100.4 degrees F., which the author considers almost pathognomonic of the condition. Vomiting and urinary retention are not very valuable signs. Laboratory aids are of little value except as indicators of the amount of hemorrhage. Various types of clinical courses are described in detail. The diagnosis is made in about 23 per cent of cases, and the diagnosis of internal hemorrhage is about 10 per cent more. The condition may be confused with peritonitis perforated appendix perforated gastric ulcer, ruptured tubal pregnancy, or diaphragmatic pleurisy. Rib fracture is present in about 15 per cent of the cases. Hemothorax is probably more than 5 per cent and injury to the left kidney in 10 per cent.

The treatment is splenectomy as soon as the diagnosis is made or suspected. If the diagnosis is made the author recommends an incision which gives good access to the spleen, starting at the left costal margin at the eighth interspace and descending obliquely downward toward the umbilicus. If hemothorax is present he advises continuing the incision upward to the costal margin cutting through the rib cartilages, and converting the operation into a thoracotomy. Blood transfusion may be indicated postoperatively but the author does not recommend the practice of leaving the blood in the peritoneal cavity or of re-injecting it intravenously. Conservative measures such as suture, partial splenectomy, or tamponade are hazardous and in the main useless. As a rule no lasting ill effects follow splenectomy, but in some cases the loss of the spleen at a time when the patient is already weakened may have fatal consequences.

The author reviews 353 cases reported in the literature since 1885 and reports nineteen additional cases. The article is supplemented by an extensive bibliography. MICHAEL L. MASON, M.D.

**Aumont and Gregoire** Severe Contusion of the Abdomen with Disinsertion of the Mesentery. Immediate Resection of the Right Half of the Colon. Open Fracture of the Patella (Contusion abdominale grave desinsertion mésentérique hémicolectomie droite d'urgence fracture ouverte de la rotule) *Bull. et mém. Soc. nat. de chir.* 1916 61 1035

The patient whose case is reported was injured in an automobile accident. At operation performed immediately, the distal 20 cm. portion of the ileum was found torn from its mesentery and the meso of the ascending colon presented an irregular tear. Resection of the portion of injured ileum and of the proximal half of the colon was done. A diffuse hemorrhage from the posterior abdominal wall was arrested by the placing of a Mikulicz drain.

The open fracture of the patella which the patient had sustained was treated by suture ten days after the accident. No infection developed in the knee.

The patient made a satisfactory recovery.

In the discussion of this report there was criticism of the delay in the treatment of the fracture as the experience of the war showed that joint lesions should be operated upon immediately regardless of the associated injuries. ALBERT F. DE GROAT, M.D.

**Bérard and Dunet** Roentgenography of a Subphrenic Abscess (Radiographie d'un abcès sous phrénique) *Lyon Chir.* 1926 xxii 651

After transdiaphragmatic drainage in a case of subphrenic abscess an injection of about 50 c.c. of lipiodol mixed with 30 c.c. of sterilized oil was made through a Nelaton sound which was easily slipped between the convex surface of the spleen and the diaphragm. The roentgenogram showed a very tortuous cavity with many diverticula on the convex surface and at the upper pole of the spleen. The abscess extended to the midline with many processes, and the roentgenogram shows how difficult it would be to drain it.

The roentgenogram is valuable in such cases as it shows the surgeon just where drainage and counter openings should be made.

AUDREY G. MORGAN, M.D.

**Bérard and Dunet** Hematoma of the Iliac Fossa in a Hemophilic Operation Followed by Severe Hemorrhage. Intravenous Injection of Citrate Recovery (Hématome de la fosse iliaque chez un hémophile intervention suivie d'hémorragie grave injection citratée intraveineuse guérison) *Lyon Chir.* 1926 xxii 622

The patient whose case is reported was a boy of 18 years who was sent to the hospital with a probable diagnosis of sarcoma of the pelvis. An exploratory operation revealed a large hematoma of the iliac fossa. The family history, obtained after the operation, showed undoubted maternal hemophilia. At 3 years of age the patient was treated for



what was called a white swelling of the knee and at various times thereafter he had attacks of pain in the ankle and wrist joints which were called articular rheumatism. These were probably attacks of hæmophilic arthritis as they appeared and disappeared quickly leaving the joints perfectly normal. Recently the patient began to have difficulty in walking which became worse until he was unable to extend his thigh completely and walked bent forward.

Examination revealed a large swelling in the left iliac fossa. The interference with movement of the hip joint seemed to be purely mechanical. Operation showed a large hæmatoma from which a large quantity of black clots was removed. The effusion of blood had occurred between the iliac muscle and the bone and extended backward and upward to the posterior superior spine of the ilium. There was no abnormal oozing during the operation and as the coagulation time was normal the wound was closed.

For twenty four hours convalescence was normal but at the end of that time the iliac swelling began to recur rapidly and an infiltration of blood appeared over the whole right half of the abdomen in the inguinal canal, the right scrotum and the penis. The wound was therefore opened and firmly tamponed but the oozing did not stop and the blood would not coagulate. pulmonary complications and a labial herpes with hæmorrhagic contents of the vesicles developed. As a preliminary to blood transfusion an intravenous injection of 15 ccm of citrate (a solution of sodium citrate combined with citrate of manganese, magnesium and ferri potassium tartrate) was given. After a period of extreme shock with cyanosis and tachycardia of 180 to 190

for two hours the patient recovered. The next day the oozing had stopped and his general condition was so good that transfusion was unnecessary.

AUDREY G. MORGAN M.D.

**Brady L. Solid Tumors of the Urachus** *Arch Surg* 1927 xiv 46

BRADY reviews the literature on solid tumors of the urachus and reports one case of his own bringing the total number of recorded cases up to twenty.

The average age of the patients was 44 years. These tumors have been found more frequently in men than in women. In fourteen case reports no etiological factor was mentioned. In four cases the tumor developed from the walls of a urachal cyst. The symptoms were pain in the middle of the lower abdomen and when the bladder was involved, dysuria, polyuria and hæmaturia.

Eighteen of the tumors were malignant, seven being sarcomata and eleven carcinomata. In fourteen of the eighteen cases of malignant tumor the bladder was invaded by the growth when the patient first sought treatment. It is often difficult to distinguish clinically between a malignant tumor of the urachus and an inflammatory condition of the anterior abdominal wall due to infection of urachal remains or urachal cysts. However in inflammatory conditions pain is apt to be the first symptom and fever and night sweats soon occur.

To effect a cure in a case of malignant urachal tumor a very radical operation must be performed. As a rule this must include removal of the vertex of the bladder and of portions of the anterior abdominal wall.

ARTHUR L. SHREFFLER M.D.

# GYNECOLOGY

## UTERUS

**Young M. and Stewart C. Cancer of the Uterus**  
*Lancet*, 19 6 CCXI 1258

This is a statistical study of 214 cases of carcinoma of the uterus with special attention to the end results of operation.

Ninety per cent of the patients were traced for five years (or until the date of death) and some longer than that. Since cancer of the corpus uteri is much less malignant than cancer of the cervix, these two groups are considered separately. There were 176 cases of cervical carcinoma and thirty-eight of cancer of the body of the uterus. In both of these groups both palliative and radical operations were performed.

The mortality of radical removal of the uterus in cancer of the cervix is relatively high, but the end results of this operation are so favorable that at the end of four years the number of survivors is four times, and at the beginning of the sixth year, nine times, the number in comparable groups in a large series of cases permitted to run their course without treatment. Furthermore, the figures for cases of cancer of the body of the uterus treated by radical operation suggest an even more favorable result than is obtained in cancer of the cervix treated in like manner.

A study of the figures presented by the authors show that the age of the patients who have cancer of the corpus uteri is about five years higher than that of patients with cervical cancer. It shows also that the number of children borne by the women with cervical cancer was about twice the average number borne by women with cancer of the corpus uteri.

PAUL W. SWEET, M.D.

**Heimann, F. Pre Operative X-Ray Irradiation of Carcinoma of the Uterus** (Anteoperative Roentgenbestrahlung des Uterus carcinoma und ihre Tiefenwirkung) *Zentralbl. f. Gynaek.* 1926 1 1045

The author first attempted to improve the operative results in cancer of the uterus by pre-operative irradiation. He tried all types of roentgen technique and although from the first there was a decrease in the ill smelling discharge and the previously ulcerative bleeding craters became covered over with smooth epithelium, he could demonstrate no change in the bacterial flora. He is therefore of the opinion that pre-operative irradiation will not render the operation any safer in the sense that it deprives the bacteria of their nourishing medium—a view contrary to that held by Mayer of Tuebingen and Fuerst of Zurich.

The most significant effect of the irradiation is that a parametrium which before the treatment was

greatly infiltrated, after the irradiation was soft and normal to the touch as the result of the regression of the inflammation.

As to the choice of time at which to operate after irradiation, the author's investigations showed that this is a perplexing question inasmuch as the deeper carcinoma cells are not affected by the treatment. The time should be that which permits the most favorable effect of the irradiation and will not delay operation sufficiently to favor dissemination of the cancer cells.

Heimann rejects the use of radium and mesothorium for pre-operative treatment as these substances cause technical difficulties in the operation. He has never seen any complications following X-ray irradiation. The operation was at no time rendered more difficult and connective tissue changes were never seen. Hemorrhage was no more profuse than is usually the case. The skin closed perfectly.

The author would reserve pre-operative irradiation for selected cases since, between the time of irradiation and the operation, the viable cells can still proliferate and reduce the chances of success.

SCHUMACHER (G)

## ADNEXAL AND PERIUTERINE CONDITIONS

**Tuffier T. An Attempt to Protect the Ovaries During the X-Ray Treatment of Uterine Fibroids** (Essai sur la protection des ovaires dans le traitement des fibromes utérins par les rayons X) *Presse méd.* Par 1926 XXXIV 1473

Roentgen therapy is thoroughly established as a method of treating uterine fibroids, but its results must be considered from two points of view, viz., the relief of the symptoms and the disappearance of the tumor.

Experience indicates that the disturbances due to the fibroid cease when the function of the ovaries is abolished. Thus X-ray treatment is in reality a non-operative castration. Certain roentgenologists have succeeded in arresting the hemorrhages with doses not destructive to the ovary, but the constancy of the results and the duration of the cures remain to be determined.

When it becomes possible to relieve the symptoms, cause regression of the fibroid and at the same time preserve the ovarian function the value of X-ray therapeutics will not longer be debatable. In the cases of young women in whom it was desirable to preserve genital function but myomectomy was not feasible Tuffier attempted to protect the ovaries during the period of X-ray treatment. The following method was found successful.

When the exploratory operation showed the impossibility of enucleation the author enclosed each

ovary in a bivalved lead capsule having on one side an opening to accommodate the ovarian pedicle. The edges of the valves were perforated to allow their approximation by sutures. The lead capsule was 4 mm thick lined with aluminum to prevent secondary irradiation and coated with paraffin. Following the X ray treatments the capsules were recovered at a second operation. This method has been employed in three cases.

A patient 29 years old was found at operation to have a soft fibroid the size of the head of a newborn infant. As enucleation did not seem justifiable and the patient would not permit destructive operation a capule was placed over each ovary and fixed to the lateral portion of the broad ligament.

After several X ray treatments the abdomen was again opened (six days after the first operation) and the capsules were removed. The ovaries appeared normal in every respect. Profuse metrorrhagia of two days duration followed. Thirty eight days later the patient menstruated for three days and a month later again menstruated normally. About this time it was found that the tumor had increased in size and hysterectomy was deemed advisable. The tumor was found to be a myoma with a rapid growth. There were no structural changes that could be ascribed to the irradiation. This case evidently represents a failure of X ray therapy.

In a second case multiple fibroids which could not be enucleated were found. The same procedure was followed without incident. Normal menstruation was re-established but again the irradiation had no apparent effect on the size of the tumor.

The third case was very similar to the second. Normal menstruation was restored but there was no reduction in the size of the tumor.

The author believes that the method described is indicated in certain types of cases and might be extended to protect other sensitive organs such as the adrenals.

ALBERT F. DE GROOT, M.D.

**Cotte G. and Bertrand P. Three Cases of Implantation of the Tube into the Uterus (Trio cas d'implantation tubo utérine) *Tron kir* 1926 xxvii 660**

The authors report three cases in which it was necessary to resect a part of a fallopian tube on account of adhesion. The tube was then implanted into the uterus. The cornu of the uterus having been curetted a needle threaded with catgut was passed through the fundus of the uterus and out at the cornu and the catgut was used to pull the end of the tube down into the cavity of the uterus. The tube was fixed in the uterus with two non perforating sutures.

This operation has been objected to on the ground that the anastomosis may become obliterated secondarily and that it forms a point of least resistance at which rupture may occur in pregnancy. While implantation through an incision of the anterior wall might leave a scar that would predispose to rupture the authors do not believe that

the slight trauma of their operation could have any such result. They admit the possibility of obliteration of the anastomosis but examination with iodolol in their cases has shown the tube to be permeable in one case it was found permeable five months after the operation. Some cases of pregnancy after this operation have been reported in the literature but pregnancy has not yet occurred in any of the authors' cases.

AUDREY C. MORGAN, M.D.

**Hartmann J. P. The Treatment of Non Tuberculous Adnexal Affections (Die Behandlung nicht tuberkulöser Adnexerleiden) *Zeitschr. Obst. u. Gynec.* Scand. 1926 v. 24**

This article reports upon 353 cases of non tuberculous adnexal affections treated during the period from 1917 to 1933. A re-examination was made in all except eight.

Hartmann emphasizes that conservative treatment such as the use of gonococcal vaccine, protein therapy, treatment with turpentine and diathermy should be tried in every case. However he has not had much experience with these measures. The best results from conservative treatment (recovery in 63 per cent of the case) were obtained in acute conditions. In chronic cases conservative therapy resulted in recovery in only 45.9 per cent. In the acute cases the cure seemed to be independent of the extent of the lesion whereas in the chronic cases the extent of the lesion was a factor influencing recovery. The patient's social circumstances were found to be of far less importance than was expected.

Operative treatment was avoided as much as possible in the acute cases but was believed to be indicated in the chronic cases in which the condition had made the patient an invalid and recurrences were frequent. The patient's social circumstances and age were taken into consideration. The various operative procedures are discussed—colpotomy, removal of one tube, removal of both tubes and one ovary and total extirpation—and the technique for liberation of the adnexa and Laue's hemisection and drainage is described.

The best results were obtained from radical treatment. Of the 353 patients 117 were treated surgically with three deaths. In the surgically treated cases recovery resulted in 81.25 per cent where as in those treated conservatively recovery resulted in only 52.5 per cent.

The author believes that conservative treatment is often overdone.

**Ahlstrom F. The Treatment of Non Tuberculous Adnexal Inflammations (Die Behandlung nicht tuberkulöser Adnexitzen) *Zeitschr. Obst. u. Gynec.* Scand. 1926 v. 29**

In a review of 1352 cases of salpingitis treated at the Sabbatsberg Hospital in the period from 1910 to 1923 exclusive of cases of tuberculous salpingitis the author found that life threatening conditions occurred in at least forty one (2.6 per cent) most of

which (forty) were cases of septic salpingitis. In more than half of these cases (twenty one) the condition was related to pregnancy (abortion, usually induced, and in a few cases delivery and extra-uterine pregnancy), but in the rest no such relationship could be proved (nineteen in 136, such cases of salpingitis, 14 per cent).

In the cases of gonorrhoeal salpingitis, life endangering conditions were rare. In 477 cases there was one death from ileus, a mortality of 0.2 per cent, and if secondarily infected cases are included, there was an additional death from septic peritonitis, making two fatalities in 490 cases, a mortality of 0.4 per cent.

The author discusses the septic types of salpingitis and the complications and conditions calling for operation in the period of fever. The primary and end results in the rest of the cases—the majority—in which conservative treatment was possible and those in which operation was done later in an afebrile stage, have been reported by Holtz in *Acta gynecologica Scandinavica* Vol. IV, Nos. 3 and 4.

The relatively high incidence of life endangering conditions should not be allowed to influence the indications for operation in the sense of the routine performance of an operation in the acute stage, as has been proposed by certain gynecologists.

In the acute cases the author has given expectant treatment first and has operated only upon the appearance of a life threatening condition or in certain cases, to prevent the development of such a condition. When these rules were followed the total mortality was 2 per cent. If we exclude the few cases of postpartum salpingitis and the cases of abortion in which latter the mortality is highest and the condition is so severe that it usually ends fatally whatever the treatment, the mortality was only 0.9 per cent.

The author is of the opinion that it is impossible to obtain better results by operation performed during the stage of fever. According to most statistics the effect of such treatment is very much poorer as regards both the primary and the end results.

Aside from the rare cases of life threatening complications in gonorrhoeal salpingitis and the cases incorrectly diagnosed (appendicitis extra uterine pregnancy, twisted ovarian tumor) it is chiefly the cases of septic salpingitis which call for operation in the stage of fever.

In the majority of the cases the process becomes walled off and in some of them a cure is obtained by conservative treatment. Sometimes an intraperitoneal or adnexal abscess is formed which can be incised without opening the abdominal cavity by colpotomy or laparotomy just above Poupart's ligament. Not infrequently it may be necessary to make several such incisions. Except in severe septic cases following abortion the prognosis under such treatment is good. After from one to six years 77 per cent of the patients were cured, 6 per cent had only slight complaints, and 16 per cent had recur-

rences. Six per cent had become pregnant. The persistence of a fistula is rare.

Even when it is necessary to open the abdominal cavity operation is indicated in salpingitis with localized peritonitis under the following conditions:

1. When at the beginning of treatment, the symptoms of septic infection are so severe that the condition appears dangerous, as in cases of large pus pockets. In such cases the condition is usually a recurrence. As the extirpation of these pus pockets may be very difficult because of adhesions and friability of the parametrium, it is best, especially when there are other unfavorable circumstances (such as adiposity, cardiac weakness) to treat by incision and drainage rather than excision and to do this in two stages if possible.

2. When the local swellings increase or do not decrease and the symptoms of septic infection persist or increase with deterioration of the general health, weakening of the pulse, a high fever, and repeated chills and vomiting, and when the salpingitis is a non puerperal infection. In such cases the condition is often a recurrence and operation must be undertaken to prevent the development of diffuse peritonitis such as occurred suddenly in several of the cases reviewed, with or without rupture of the adnexal abscess. The operation should consist in extirpation of the adnexa if the patient's condition will allow it otherwise, in incision of the abscess and drainage.

3. When the general condition deteriorates so that it is apparent that death will result from chronic infection if operation is not undertaken. In such cases the condition is often tuberculous with generally a secondary infection. As Wetterdahl has pointed out on the basis of the author's material (*Acta gynecologica Scandinavica* Vol. III No. 3), it is seldom that the fever persists after two months if tuberculosis is absent. When there is fever after this length of time operation should be performed even if the condition does not appear dangerous to life and the attempt should be made in spite of technical difficulties to extirpate the adnexa whether the condition is a septic infection or tuberculosis or both, since otherwise there is no prospect of cure. In addition, drainage should be established unless there are definite indications that the condition is tuberculosis without secondary infection.

When there are symptoms of diffuse peritonitis, when peritoneal symptoms spread more or less quickly in the hypogastric region as far as or even beyond the umbilicus and when the general condition, the pulse and recurring chills and vomiting indicate that the peritonitis is of a septic nature operation should be performed without delay. Also in peritonitis following abortion or delivery the attempt must be made to operate if it is not infrequently the case, the condition appears hopeless on account of pyæmic symptoms. The operation must be restricted to laparotomy with evacuation of the pus and drainage, such patients are unable to withstand extirpation of the adnexa.

## EXTERNAL GENITALIA

Westman A. The Results of the Treatment of Cancer Vaginae at Radiumhemmet Stockholm. *Acta radiol.* 19 6 vii 632

The author gives an account of the radiological treatment of twenty one cases of cancer of the vagina. After a period of observation of from six to twelve months five (23.8 per cent) of the patients were free from symptoms. Three of the cases were operable three were borderline cases and the rest were inoperable. Of twelve patients re-examined after five years two (16.7 per cent) remained clinically cured. The condition of one of the latter was operable and that of the other inoperable.

## MISCELLANEOUS

Westman A. A Contribution to the Question of the Transit of the Ovum from the Ovary to the Uterus in Rabbits. *Acta obst et gynec. Scanl.* 19 6 v suppl

The author first briefly reviews the topographical anatomy of the internal genital organs in different mammals. Then follows an account of the various theories regarding the transit of the ovum from the ovary to the tube and those regarding its transit through the tube. Of the former the theory of the ciliary currents and Sobotta's theory of the importance of the bursa ovarica and the function of the unstriated muscle of the adnexa are cited in detail. Of the latter particular reference is given to the activity of the ciliary cells and the peristaltic contractions of the tubal musculature.

By the abdominal window method the author has carried out investigations on the tubes of rabbits. In his operative technique in these studies the part of the abdomen in which the internal genital organs are situated was shut off from the rest of the cavity by suturing the caecum to the anterior and posterior walls. In this manner the intestines which normally cover the tube and ovary were moved out of the way and an obstructed view of the organs was obtained.

Observations were made on animals during their sexually quiescent period as well as during oestrus and gestation. During the quiescent period there are to be noted in the musculature of the mesotubarium fairly weak contractions occurring at relatively long intervals which draw the entire tube medially and caudally thereby rendering it more looped and the bursa ovarica narrower. During these contractions the immobile ovary becomes more or less enclosed in the bursa. In the tube continuous contractions occur. These pass over the ampulla for shorter or longer distances toward the uterus but in the looped isthmus they usually proceed only from one apex to the next one on the uterine side. A contraction then follows in the next loop a continuous wave being thus set up in the direction of the uterus. Contractions having an antiperistaltic course may also be observed occa-

sionally. The contractions are as a rule followed by more or less obvious dilatations. The intervals between the contractions in one and the same loop vary from five to thirty seconds.

During oestrus fundamentally the same movements of the tube and mesotubarium are observed. They differ however in intensity and rhythm. The mesotubarial movements are very powerful and cause considerable constriction of the bursa ovarica. The ligamentum ovarii proprium is the site of rhythmical contractions drawing the ovary out and in of the narrowed bursal opening. In addition the ovary is rotated to and fro around its long axis. The displacements of the tube and ovary cause the various surfaces of the ovary to slide uninterruptedly along the fimbrial apparatus. Contractions and dilatations in the tube are well marked the intervals of time between them vary between five and twelve seconds.

Muscular contractions of a similar type can be observed during the first twenty four hours after fertilization but then become reduced in intensity and rhythm. They are considerably weaker during gravidity than during the quiescent period.

The muscular activity of the tube and the ligamentum latum is regulated by the ovary. The contractions are weak after castration and after destruction of the ovarian follicles by heat. They are strongest during oestrus when ripe follicles are in existence. The corpus luteum has a retarding influence on the strength and rhythm of the contractions.

It is probable that through alternate contractions and dilatations in the tube a powerful suction is set up. It has been demonstrated experimentally that this suction may effect a movement into the tube of ova present in the free abdominal cavity which have been discharged from an ovary and fixed at some distance from the infundibulum. External migration of the ovum is also possible. The transit of the ovum seems to be considerably facilitated by the approximation of the infundibulum and the ovary during oestrus and ovulation by the muscular activity of the ligamentum latum. In addition to its other uses the bursa ovarica probably serves as a protective device.

During oestrus this is closed round the ovary off and on and the mesotubarial contractions set up a suction in the bursa by which smaller particles present in the abdominal cavity can be brought in close approximation to the abdominal ostium of the tube. However it is not necessary for the bursa to be intact for the transit of the ovum as this may occur even after the bursa has been partially extirpated.

The transit of the ovum through the tube is probably effected chiefly by muscular contractions. After follicular rupture these are very powerful but later become weaker. Theoretically this may explain the fact that the passage of the ovum is rapid through the abdominal part of the tube but greatly retarded through the uterine part.

Jung P and Schürmer, A The Combination of the Pneumoperitoneal Roentgen Picture of the Female Pelvic Viscera with Hysterosalpingography (Ueber die Kombination des Pneumoperitonealen Roentgenbildes der weiblichen Kleinbeckenorgane mit der Hysterosalpingographie)  
*Acta radiol* 19 6 v, 395

In simple roentgenograms of the female pelvic organs made with the induction of pneumoperitoneum there are difficulties to interpretation, particularly with respect to the relationship of the pelvic organs to neighboring organs. If pneumoperitoneum is combined with injection into the uterus and tubes of an opaque substance such as lipiodol the interpretation of the roentgenograms is greatly facilitated, particularly in cases of adnexal

affections and tubal pregnancy and the differentiation of adhesions and disease conditions in neighboring organs.

For testing the patency of the tubes, salpingo-hysterography alone has a great advantage over simple tubal inflation in that it renders the tubes visible. It therefore reveals something of the nature and location of any obstruction that may be present and gives more complete information with regard to the shape and degree of development of the uterus.

In the diagnosis of intra uterine changes—tumors and other irregularities in the mucous membrane—these methods are excellent substitutes for the not harmless dilatation and palpation. In 150 cases the authors noted no unfavorable after effects.

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

**De Nobele and Lams** The Effect of the Roentgen Rays on the Evolution of Pregnancy and the Development of the Fetus (Action des rayons roentgen sur l'évolution de la grossesse et le développement du fœtus) *Bull J Radiol* 1926 xxxi 449

Various reports have been made of the birth of abnormal children after roentgen ray treatment of the mother during pregnancy. In order to study this effect of the X rays the authors irradiated guinea pigs and rats during pregnancy.

They found that irradiation with an erythema dose generally killed the embryo. The more penetrating the rays the more marked the effect. The earlier in pregnancy the irradiation was given the surer it was to cause the death of the embryo. If the embryo was not killed in the beginning of the irradiation its later development was abnormal. There were no abortions but the evolution of the pregnancy was stopped and the embryos were absorbed. The irradiation would probably have caused abortion if it had been given during the latter part of the pregnancy as in the experiments performed by Schinz on rabbits. In guinea pigs the irradiation seemed to produce ovarian cysts. The embryos that were carried to term showed lesions of the nervous and sensory systems such as hydrocephalus and microphthalmus which could not have been transmitted by heredity. **AUDREY G. MORGAN, M.D.**

**Laffont and Mélé** The Transplacental Passage of Staphylococci in a Fatal Staphylococcus Infection Complicated by Meningitis (Passage du staphylocoque par voie placentaire au cours d'une staphylococcémie mortelle avec méningite) *Bull Soc d'obst et de gynéc de Lar* 1927 xi 566

A woman 24 years of age was admitted to the hospital on April 28, 1916, for nervous disturbances complicating pregnancy. The pregnancy had been normal until April 10 when symptoms of premature labor began. Opium was then administered.

After four days the patient's family noticed that she had difficulty in speech and weakness in the right leg and arm. Two days before her admission to the hospital she developed facial paralysis and vomiting occurred. The temperature was 39 degrees C. Examination at the time of the patient's admission revealed signs of meningitis. Lumbar puncture withdrew spinal fluid containing pus.

Without waiting for a laboratory examination an injection of anti meningococcus polyvalent serum was given. The laboratory report showed staphylococcus meningitis.

On May 4 a blood culture was positive for the staphylococcus. On May 6 the patient became

comatose and delivered herself of a female child weighing 1425 gm. The child died half an hour later. On May 7 the patient died with bulbar paralysis.

After the death of the child its heart was punctured and thermocauterization of the cardiac wall being performed. On culture of the blood extracted from this cavity a growth of staphylococcus was obtained. This showed that the septicæmia and meningitis had been transmitted transplacentally from the mother to the child.

**SALVATORE DI PALMA, M.D.**

**Benckert, H.** A Case of Gravidity in a Uterine Diverticulum. *Acta obst et gynec Scand* 1926 v 430

Benckert's case of pregnancy in a uterine diverticulum occurred in a woman aged 33 years who had had a normal parturition in 1912. In 1917 she had had a uterine curettage on account of irregular and persistent bleeding of unknown etiology. In 1920 another curettage was done for a mucous polypus in the corpus.

After the last operation the patient menstruated normally. Her last period began January 1, 1922. On February 1 some drops of blood were lost. At the time of examination on February 8 the size of the uterus suggested a pregnancy in the seventh week.

Five weeks later when the patient was seen again she had been having for two weeks a chocolate colored discharge from the vagina and pain in the lower part of the abdomen. Examination revealed besides the discharge a uterus which was moderately tender on palpation and as large as a uterus at the beginning of the third month of pregnancy.

On the patient's admission to the hospital a dilatation and curettage was done. The scrapings were extremely scanty and there was little evidence of an ovum. Microscopic examination of the scrapings showed them to consist of mucous membrane cells, the stromatic cells of which had assumed a decidual character. A diagnosis of incomplete abortion was made.

Just before the patient was to be discharged from the hospital an internal examination was made. This revealed close to the right uterine angle a soft fluctuating tender and movable mass the size of a goose egg. Laparotomy showed on the right side at the tubal angle a thin walled sac about the size of an apple which was filled with fluid and contained a fetus 9 cm long. This sac communicated with the uterine cavity through a canal about the size of a pencil. The excised sac was found to contain a typical placenta with decidua and villi.

**HARRY W. TINK, M.D.**

**Brinkley A S The Management of Acute Abdominal Complications During Pregnancy**  
*Virginia M Month* 1926, lvi 597

Fibromyomata with a twisted pedicle, ovarian cyst with a twisted pedicle pyosalpinx incarceration in the pelvis of the retroverted gravid uterus, infection and inflammation of Meckel's diverticulum, peritonitis, intestinal obstruction ruptured or unruptured extra uterine pregnancy acute appendicitis, and pelvic abscess complicating pregnancy demand immediate operation whereas acute cholecystitis and gastric or duodenal ulcer should be treated palliatively, if possible, until after the termination of the pregnancy.

The conservative treatment of pyosalpinx during pregnancy is unwise because labor will almost certainly rupture the sacs. ALBERT W HOLMAN M D

### LABOR AND ITS COMPLICATIONS

**Trillat, P A Special Position of the Head of the Fetus in Breech Presentation** (De l'existence d'une attitude particulière de la tête fœtale dans les présentations de siège) *Gynec et obst* 1926 xiv 211

According to the classical textbooks on obstetrics the head of the fetus in breech presentation is in more or less marked flexion the chin rests on the sternum, and the two parietal eminences are at equal distances from the two acromion processes. The head is therefore in a condition of unstable equilibrium which causes cephalic ballottement. One of the best signs of the presence of the head in the fundus is the accentuated throat groove.

Several years ago the author's attention was attracted to a special position of the head in breech presentation, occurring especially in the incomplete form. This consists in rotation with forced inclination of the head. The child's hands rest on its flexed knees and the head is turned to one side the cheek and side of the head resting on the backs of the hands. The rotation and inclination vary in degree. In very marked cases one of the parietal eminences rests on the wall of the chest, the ear being in contact with the sternum. The top of the head looks forward.

Trillat first discovered this position when he was trying to extract a child presenting by the breech. He had extracted the breech and brought down the arms but could not find the mouth in the usual position. He discovered the ear in contact with the sternum and to find the mouth was obliged to pass his hand far round toward the extremity of the transverse diameter. He thought this was simply an isolated case until a colleague told him some months later of a similar one. He then made a systematic study to determine the frequency of the position. In his material at a maternity hospital since May 1925, he has had thirty-six breech presentations, twelve of them complete and twenty-four incomplete. In the twelve complete breech presentations, inclination and rotation of the head

occurred in only one (8.3 per cent), while in the twenty-four incomplete breech presentations it occurred in eight. In two cases the inclination was very great, in three moderate, and in three slight. Half of the mothers were primiparæ.

The position described presents difficulty in diagnosis because cephalic ballottement and the throat groove are absent; it is impossible to practice version by external maneuvers, and the chin may catch on the symphysis. AUDREY G. MORGAN, M D

**Zarate F Partial Symphysiotomy and the Symphysiotomy of Frank** (La symphysiotomie partielle et la symphysiotomie de Frank) *Gynec et obst* 1926 xiv 259

The author calls attention to the fact that his subcutaneous symphysiotomy is a very different procedure from the operation of Frank. It is more than a simple modification of an old technique and its indications and possibilities should be visualized from a different standpoint. The method of Frank is a blind open dangerous operation and seems to favor complications rather than to prevent them. The structures which oppose a rapid and complete separation of the pubic bones are sectioned blindly.

In the author's technique an intra-articular section of the cartilage and of the inferior ligament is performed with a scalpel and separation of the bones is accomplished by forced abduction of the thighs. The operation is bloodless and safe demands only ordinary operative skill and may be done under local or general anesthesia.

Zarate's pelvotomy should not be considered a substitute for the low cesarean section. Pelvotomy is indicated only in pelvic dystocia in which the conjugata vera is more than 8 cm. When the conjugata vera is less than 8 cm., cesarean section finds its application.

The patient is placed in the dorsal position with the legs strongly abducted. Before the operation the upper border of the symphysis is marked without displacing the skin surface. With the left index and middle finger in the vagina the fetal head is pushed upward and to one side. A 4.5 cm scalpel is then introduced vertically just missing the upper border of the symphysis to enter the fibrocartilage of the symphysis. The fibrocartilage is sectioned from above downward the scalpel always being kept within the articulation. The sensation imparted by the cartilage which contrasts with the sensation produced by contact with the ligaments, serves as guide. The section is made with a rotary motion to avoid enlarging the initial opening in the anterior ligament. The pubic bones usually separate with a cracking sound and the separation can be increased as necessary by forced abduction made by the assistants supporting the legs. If necessary, the superior ligament may be sectioned. A separation of two fingerbreadths may be expected, and it is possible to obtain one of three fingerbreadths. Labor is ordinarily allowed to proceed normally. The knees are bandaged together for the first four days.



The patient is then allowed to move about in bed and on the twelfth day she is allowed to get up

ALBERT I. DE GROOT M.D.

**Lundquist B. A Contribution to the Knowledge of the Etiology of Colporrhæxis** *Acta obst et gynec Scand* 1926 v 408

The author reports the case of a 43 year old para iii. The patient's first two labors had been normal. External examination at the beginning of her third labor at term revealed a vertex presentation with the head engaged in the pelvic brim. The membranes ruptured three and a half hours after the onset of labor. On external examination three hours after rupture of the membranes the head was found engaged just below the plane of the ischial spines with the anterior fontanelle presenting. The cervix was retracted. The pains were fairly strong but half an hour later they weakened and the patient became restless and vomited. There was no external bleeding. The pulse was 110 and the fetal heart sounds were good.

The pains soon ceased altogether. The pulse rate rose to 140 and the fetal heart sounds ceased. Peritoneal irritation was evident. In the abdomen it then became possible to feel two large swellings united in the middle. The left one as large as a man's head and the right one smaller. At the umbilicus a small fetal part could be palpated close under the abdominal wall. A diagnosis of rupture of the uterus was made.

At laparotomy the fetus was found lying free in the abdomen. The head remained fixed in the pelvic brim. The uterus was found torn from the anterior vaginal fornix from the site of the left uterine artery to the region just behind the right uterine artery. The arteries themselves were uninjured. Death occurred from sepsis. The cause of the rupture in this case was not a mechanical factor but some condition of the tissues probably the suppurative endometritis and myometritis.

In the vaginal tissues remaining on the uterus there were abscess like accumulations of leucocytes and in one or two areas evident demarcation zones of leucocytes. In the opinion of the pathologist the inflammatory process had been present for two or three days before labor. ROLAND S. CRON M.D.

## PUERPERIUM AND ITS COMPLICATIONS

**Descarpentries. On the Results Obtained with Hæmolyzed Autogenous Blood in the Different Types of Puerperal Fever** (Considérations sur les résultats obtenus par l'autogène hémolysé dans les divers modes de la fièvre puerpérale) *Bull Soc d'obst et d'gynec de Par* 1926 xv 509

The author reports several cases of puerperal fever treated with hæmolyzed autogenous blood.

The technique is not described but Descarpentries states that it is quite different from the usual autogenous hæmotherapy. The latter having the effect of the injection of a foreign protein while in his method there is never any shock and the effect is due to an unknown substance. He emphasizes that the red blood cells must not be killed before lysis for if this occurs a reaction similar to that following the injection of a foreign protein is produced.

The results obtained vary according to the organism responsible for the infection.

In three cases of puerperal fever due to streptococci treatment by the author's method resulted in a quick complete cure. In two cases due to staphylococci the results were excellent but were obtained less promptly. The result was good also in a case due to the gonococcus. In a case due to the colon bacillus death resulted. In a case due apparently to a spirillum the use of autolyzed blood and arsenical treatment was followed by recovery.

The most serious type of puerperal infection is that due to the colon bacillus.

In the discussion of this report LAUCOT stated that in his opinion colon bacillus infection is the least serious type. SALVATORE DI PALMA M.D.

## NEWBORN

**Floris. Birth Trauma and the Fate of Infants Extracted with Forceps** (Il trauma da parto ed il destino dei bambini estratti col forcipe) *Riv ital di gynec* 1926 iv 631

The author examined the infants extracted with forceps at his clinic during the period from January 1, 1910 to December 31, 1924 and attempted to find out what became of those that were discharged living and well. The immediate mortality was 15.09 per cent. Cans reports the mortality as 12.45 per cent, and Schmarow gives it as 9.2 per cent. In the statistics of eighteen obstetricians collected by Winter it ranged from 6.9 to 27.7 per cent whereas in those of eight obstetricians collected by Wyder it ranged from 20 to 56 per cent. The author's statistics are based on a relatively small number of cases. Forceps extraction was done only on the strictest indications.

In the author's cases the mortality from the first to the tenth day was 4.02 per cent. Of the children examined at periods ranging from one to fourteen years after birth 57.4 per cent showed more or less manifest lesions of the scalp or skull from the pressure of the blades of the forceps. There was one case of convulsions in the first year of life and one case of choreiform movements and tic which began during the first year and still persisted in the 14th year. Of the lesions found 74.07 per cent were on the right side and 25.93 per cent on the left side.

AUDREY G. MORGAN M.D.

# GENITO-URINARY SURGERY

## ADRENAL, KIDNEY, AND URETER

Rowntree L. G. Some Contributions to Our Knowledge of Diseases of the Kidney and Liver *Canadian Med J* 1916 xvi 1437

During the last two decades the author's personal observations and studies have led him to an altered conception of disease and to greater effort for individualization in treatment. Because of the functional deficiency evidenced in disease and its wide spread and constitutional nature he is no longer satisfied with morphological, cellular, or even visceral conceptions of pathology. Such a conception of disease must of necessity affect the therapeutic viewpoint and tend toward the adoption of treatment for the prevention and correction of perverted function and of treatment based, when possible, on the response of the sick person to various functional and therapeutic tests.

By the judicious repetition of tests of renal function the progress of disease may be followed accurately, the outcome predicted and the treatment modified to meet changing conditions. The information derived from the various tests will reveal whether or not the kidney is involved, the nature of the disturbance, nitrogen or salt water metabolism, the occurrence of terminal insufficiency common to several pathological processes and the classification of cardiorenal vascular syndromes (Volhard and Fahr). The points of prognostic significance revealed are the degree of renal insufficiency, the course of the disease and the probable outcome, especially in chronic disease.

The points revealed with regard to treatment are its urgency, the indications as to its kind and degree, the extent of risk in surgical cases, and the indications for individualization.

Changes in the composition of the blood are of great significance in the investigation of the organs of excretion. The function of these organs is to keep the volume and the composition of the blood constant. Deviation from the constant usually indicates disease of the excretory organs. Besides revealing changes in nitrogenous metabolism studies of the blood chemistry yield important information relative to acidosis and alkalosis and disturbances of the acid base equilibrium of the body. The extent of anaemia may therefore be of great practical significance in relation to diagnosis and prognosis as well as to the treatment.

Few realize the importance of the ophthalmoscopic and of the still more recent microscopic studies of the capillaries of the nail folds in cardiorenal vascular disease. The fundus of the eye yields more pathognomonic pictures of disease than any other area of the same size in the body. The

capillaries of the nail fold also exhibit pictures which give information regarding disease, especially the constitutional nature of nephritis and of its complications.

The prognosis in cardiorenal vascular disease is rendered much more accurate by the use of functional tests which indicate the extent of renal insufficiency and the proximity of uraemia. By repeating the tests it is possible to follow the course of the disease. The phenolsulphonethalein, blood urea and creatinin tests have an important prognostic significance in chronic disease.

There is no routine treatment for nephritis. In fact the most striking development in the treatment is the tendency to forsake the routine for individual treatment based on the behavior of the patient to various functional and therapeutic tests.

In the treatment of oedema there is a growing appreciation of the influence of different ions on the hydration capacity of body tissues. In cases of anasarca the fluid intake, aside from that of food, must be reduced to from 200 to 300 c. cm. daily. The introduction of a new organic mercury compound, merbaphen (novasurol) has created new interest in the management of oedema. In suitable cases when given intravenously in doses of 2 c. cm. at intervals of from three to five days it often causes unprecedented diuresis. The clinical results are excellent and toxic manifestations infrequent.

The work of McIndoe and Counsellor has emphasized the bilateral nature of the liver, the remarkable dilatation of the biliary tree, the hydrohepatosis resulting from obstruction of the common duct, and the inadequacy of the portal vascular system in cases of portal cirrhosis.

Mann and Magath have succeeded in maintaining life in dogs for a period of from thirty six to forty hours after removal of the liver. In these animals hypoglycaemia develops with convulsions and death unless the blood sugar level is maintained by the administration of glucose. This work is significant in relation to hypoglycaemia in general and suggests the use of glucose in forms of toxemia associated with hepatic insufficiency. In a dehepatized animal deamidation is remarkably disturbed and the nitrogen and urea of the blood diminish simultaneously. On the other hand uric acid accumulates in the blood. There is also retention of serum bilirubin with an indirect van den Bergh reaction and the development of jaundice.

Important indicators of hepatic function are (1) the serum bilirubin (van den Bergh), (2) the bile index, (3) dye retention, tetrachlorophthalein or bromsulphthalein, (4) the bile salts in the blood and urine (?), (5) the coagulation time of the blood, (6) the fragility of the corpuscles and (7) bile and

its products in the urine stools and duodenal contents

In diagnosis the tests reveal (1) whether or not the liver is diseased (2) whether or not there is jaundice and its nature—whether it is obstructive or hæmolytic—and whether the terminal picture is common to several pathological processes and (3) the classification of hepatic diseases. In the prognosis these tests aid in determining the degree of hepatic insufficiency but this is of slight value in foretelling the course of the disease

Daily contact with disease of the liver and group investigations of the problems presented demonstrate the practical importance of these tests in diagnosis and treatment. Thus far however, their greatest service has been in the centering of interest on diseases of the liver

Factors relating to prevention are the care of acute infectious and chronic foci especially intra-abdominal foci care relative to the use of alcoholic condiments chloroform arsenic phosphorus copper phenylhydrazin and tar and care in industry with phosphorus aeroplane dope and picric acid

Specific factors relating to treatment are the use of constitutional specifics such as arsphenamin iodide mercury emetin quinine vermicides and of hepatic specifics such as water glucose and calcium. Functional factors are the relief of biliary obstruction by transduodenal drainage the relief of ascites and portal obstruction by surgical treatment (the Palma Morrison operation splenectomy or paracentesis) or by medical treatment (merbaphen ammonium salts or restriction of salt and water) the relief of hæmolytic by splenectomy the relief of congestion by digitalis diuretics and restrictions of salt and water and protection from hæmorrhage in jaundice by the use of calcium transfusions carbohydrates and water. Symptomatic factors are the relief of pruritus by calomel emetin diathermy and sweating and the relief of gastro intestinal disturbances by diet and sedatives

Perhaps the most important advances in treatment have been made in the management of ascites in disease of the liver. Whereas formerly tapping was usually resorted to it is now apparent that in a considerable percentage of cases the ascites yields to merbaphen

Hunt V C Hydronephrosis *Surg Clin N Am* 1926 vi 1133

Hydronephrosis is one of the most common lesions of the kidney. It is usually the result of an intermittent type of obstruction of the renal pelvis or the ureter. The obstruction may be either extrinsic or intrinsic

The most common cause of extrinsic obstruction is an accessory vessel or group of vessels to the lower pole obstructing the outflow of urine at the uretero-pelvic juncture. In most instances the accessory vessels include both artery and vein and vary considerably in size. They may extend to the upper pole but are more frequently noticed at the lower

pole because there they produce obstruction on account of their relationship to the ureter and pelvis. Experience has shown that ligation and division of accessory vessels to the lower pole has been inadequate and that primary nephrectomy is more satisfactory. Occasionally pelvic and abdominal tumors causing obstruction by encroaching on the ureter are encountered. In such cases of moderate hydronephrosis the symptoms will usually subside after removal of the obstruction

Intrinsic obstruction is most often caused by a renal or ureteral calculus. If the kidney becomes badly diseased or functionless nephrectomy or nephro-ureterectomy to a point below the stone, should be carried out. It is difficult to determine the part played by ureteral strictures in the production of hydronephrosis except when the stricture is situated at the ureterovesical juncture. A ureteral stone may be secondarily responsible for the obstruction. It is possible that ureteral stricture may be a factor in the so called idiopathic type of hydronephrosis in which no demonstrable obstruction is found but in such cases the possibility of compression by accessory vessels should not be too readily dismissed

Blason T Cystic kidneys (Ueber Zystenniere) *1926 vii 65*

The author describes the pyelograms in two cases of polycystic degeneration of the kidney with reference to the findings at operation and autopsy

On a pyelogram of such a kidney the renal pelvis is situated more in the center of the renal shadow than normally. The pelvis is not enlarged in relation to the size of the kidney on the contrary, it is rather narrowed from side to side by the intrusion of the cysts. The infundibula are out of proportion and irregularly arranged. The uppermost part of the ureter is displaced medially. The abnormal position of the ureter is due to the enlargement of the kidney and the altered position of the renal pelvis to the cysts surrounding it on all sides

Atonna G and Morrissey J H Polycystic kidney *Ann Surg* 1926 lxxviii 846

The authors state that about 500 cases of polycystic kidney have been reported in the literature. They report six cases of their own. Three types are recognized

1. The one in which renal insufficiency appears and the patient quickly succumbs. These cases which are discovered at autopsy illustrate the fact that only an extraordinarily small amount of kidney tissue is necessary to sustain life

2. Cases presenting symptoms of chronic nephritis. The diagnosis is difficult if the cysts remain small

3. Cases in which symptoms such as hæmaturia and clot colic direct attention to the urinary tract. Four of the cases reported in this article belonged to this group

According to the authors the value of pyelography as an aid to diagnosis cannot be overestimated. The

method must be used with caution, however, be cause of the possibility of reflex suppression. Immediately after the examination the patient should be put to bed. Heat should then be applied to both kidneys and a colonic irrigation given. The most efficient surgical treatment has been puncture or incision of the cysts. As a rule medical treatment is the method of choice.

Several typical pyelograms are reproduced

HARRY A. FOWLER, M.D.

**Mercier O. and Perard J. A Case of Profuse Hematuria from Pyelonephritis Stopped by Ureteral Catheterization** (Un cas d'hématurie abondante de pyelonephrite arrêtée par le cathétérisme urétéral) *J. d'uról. med. et chir.* 1916 VII 304

A woman of 29 years entered the hospital March 3, 1916 on account of a profuse hematuria which began January 28. The hematuria was apparently total and began spontaneously with clots. There were no other symptoms. On May 10, 1916 the patient had had a right nephrectomy for tuberculosis with hematuria.

Palpation of the kidney was negative. Cystoscopy showed the bladder normal. Fresh blood was being discharged from the opening on the left ureter.

As medical treatment had only a slight effect, catheterization of the left ureter was decided upon. A sound was passed into the pelvis and a few cubic centimeters of 1 per cent silver nitrate solution were injected. The sound was then immediately withdrawn. That evening the urine became normal in color. Bacteriological examination showed pus containing many colon bacilli. The hematuria was stopped permanently and the patient left the hospital a few days later.

This case demonstrates that a late hematuria after nephrectomy for tuberculosis does not necessarily mean a return of the tuberculosis. It may be due as in this case to a colon bacillus infection. It shows also the readiness with which such hematurias can be stopped by catheterization of the ureters. This is the first treatment to be tried in such a case. If it is successful it confirms the diagnosis.

AUDREY G. MORGAN, M.D.

**Matronoli G. Statistics on Renal Tuberculosis** (Dati clinico-statistici sulla tubercolosi renale) *Arch. ital. di uról.* 1926 III 129

Of 15 patients with renal tuberculosis who were treated at the Policlinic in Rome, nine were between 10 and 40 years of age, fifty five between 20 and 30, thirty-eight between 30 and 40, fifteen between 40 and 50, six between 50 and 60, and two between 60 and 70. Therefore 73 per cent were between the ages of 20 and 40 years. Sixty seven were females. Eighty nine (70 per cent) were operated upon. Among the thirty six not operated upon, operation was contra indicated in twelve because the tuberculosis was bilateral and in six by co-existent pulmonary tuberculosis. One patient died before op-

eration from tuberculous meningitis and seventeen refused operation.

In addition to the eighty nine clinic cases which were operated upon the author reviews fifteen from Matronoli's private practice, making a total of 104. Fourteen (13 per cent) of these patients died in the hospital. This is not the operative mortality, however, for with the exception of the cases of three patients who died within a few days after the operation, the deaths occurred after periods ranging from a month to a year. The cause of death in these cases was renal insufficiency in six, infection in three, tuberculous meningitis in two, and an unknown cause in three.

Of the ninety patients who were discharged with an operative cure, it has been possible to follow up only fifty four. Fifteen are dead. Of these, five died after less than a year, six after from one to three years, one after five years, one after six years, one after nine years, and one after ten years. The majority of them therefore died within three years. The cause of death so far as it could be ascertained was tuberculosis of the other kidney in nine, pulmonary tuberculosis in two, bone tuberculosis in one, and an unknown cause in three. The thirty nine patients who are still living were operated upon from one year to fourteen years ago. Twenty seven have no symptoms now, but twelve have bladder symptoms such as pollakiuria, pyuria, and more or less intense hematuria.

The results have not been poor considering that renal tuberculosis is a disease which is fatal in the majority of cases. Most of the patients who are cured have no symptoms worth mentioning and are able to do their work. One man has been through the war and is still in active military service and enjoying good health. One woman who is now well and able to do her work has been married twice since the operation and has had two pregnancies ending in abortion. Another woman was subjected to an abdominal hysterectomy for fibroids ten years after the nephrectomy and bore the operation well. In the patients under 50 years of age the mortality was between 33 and 44 per cent, while in those between 50 and 60 years of age it rose to 83 per cent, showing that the disease becomes much more serious with advancing age. AUDREY G. MORGAN, M.D.

**Soderlund G. A Contribution to the Roentgen Diagnosis of Renal Tuberculosis** (Beitrag zur Röntgenueber die Röntgendiagnostik der Nieren tuberkulose) *Acta radiol.* 1926 VII 304

The author has reviewed the histories of 167 cases of renal tuberculosis examined with the X-rays in the period from 1911 to 1925. The findings of the examination were positive in fifty two and in twenty nine of these were of definite value in either the diagnosis or the treatment. Soderlund divides these twenty nine cases into the following six groups.

Group 1. Both ureters catheterized. No tubercle bacilli found in the urine from the bladder or the

ureters. No definite tuberculous changes in the bladder. Six cases.

Group 2. Catheterization of the ureter of the healthy kidney only. No tubercle bacilli found in the urine from the bladder or the ureter. No definite tuberculous changes in the bladder. Four cases.

Group 3. Catheterization of the ureter on one side in three cases. pus and tubercle bacilli found. Catheterization on both sides in one case. tubercle bacilli found on only one side. tuberculosis also in other kidney shown by X ray. Four cases.

Group 4. Cystoscopy impossible because of stricture or narrowing of the urethra. Six cases.

Group 5. Catheterization of the ureters impossible because of changes in the bladder. Four cases.

Group 6. Enclosed renal tuberculosis at time of examination no communication of tuberculous process in kidney with the bladder. Five cases.

The author describes the X ray changes observed in these fifty two cases.

In no fewer than forty two cases shadows of calcification due to the tuberculous process appeared on the plate in areas corresponding to the kidneys and ureters. and in thirty one of these the shadows were so characteristic as to permit a diagnosis of renal tuberculosis on the basis of the X ray examination alone. In two cases the nature of the shadows was uncertain and in nine the appearance seemed more like that of lithiasis.

In one of the remaining ten cases with positive X ray findings there were impressions in the renal shadow at the hilus and the lower pole. In another pyelography established the presence of a cavity. In two cases cavity formations were manifested by double contours of the renal shadow. In one case a thickened ureter was found. In two cases the examination revealed dilatation of the pelvis and in three cases the renal shadows on the affected side were enlarged.

**Marion. Pyelography in the Diagnosis of Tumors of the Kidney.** (*La pyelographie dans le diagnostic des tumeurs du rein*) *J. d'urolog. méd. et chir.* 1925. Vol. 310.

Marion has previously called attention to the mistakes that may be made in the diagnosis of tumors of the kidney from pyelography. In this article he reports the case of a man who had repeated attacks of hæmaturia. Aside from a slight decrease in the function of the left kidney which was the one that was bleeding examination showed nothing but pyuria without bacteria. The latter suggested tuberculosis but the hæmorrhage was more copious than is usual in tuberculosis. A pyelogram showed no sign of tumor. The author advised operation because he thought the condition was either tuberculosis or tumor. However the patient feared operation and went to Leguen who concluded from pyelography and catheterization of the ureters that there was no urgent need of an operation.

Subsequently the patient had another attack of hæmaturia and consulted Abram. Abram also advised surgery. At operation Marion found a papilloma of the pelvis which it seemed should have shown in the pyelogram but did not. He therefore concludes that pyelography is of no value in the diagnosis of tumor in a hæmorrhagic affection in a kidney which is not increased in size. It may show no evidence of tumor when a tumor is present or it may show evidence of tumor when there is nothing but clots.

In a case of hæmaturia with clots not due to tuberculosis calculus hydronephrosis or pyelo nephritis an exploratory operation should be performed without pyelography.

In cases of large kidney without hæmaturia pyelography will show whether the kidney is enlarged from tumor or some other cause.

WUDLEY C. MORGAN, M.D.

**Marion. Mistakes That May Be Made in the Performance of Nephrectomy on the Basis of Constant Alone.** (*Des erreurs auxquelles peut entraîner le principe de la néphrectomie sur la constante*) *J. d'urolog. méd. et chir.* 1925. Vol. 317.

This article reports two cases in which a double exploratory laparotomy was performed on the basis of Ambard's constant alone and the kidneys were found macroscopically normal. Later cystoscopic examination in the first case showed nothing to indicate that the cystitis was tuberculous and functional examination of the kidneys showed them both to be normal. In the second case a later examination showed an ordinary bilateral pyelo nephritis and lesion of the epididymis suggesting tuberculosis. However there was nothing to indicate that an operation on the kidney would be advisable.

Marion has previously warned against the performance of kidney operations on the basis of the constant alone and these two cases are a further support of his argument. A nephrectomy based on the constant alone is justified only if the diseased side is definitely known and it is necessary to remove the diseased kidney even if the opposite kidney is not altogether normal. Marion cites as an example a case of large painful and evidently pyonephrotic kidney and pyelonephritis on one side and a good constant. Even if the opposite kidney is involved in such a case the pyonephrotic kidney must be removed if the opposite kidney is still sufficient or death will result. In a case in which one kidney is known definitely to be tuberculous but there is nothing special to indicate its removal except the tuberculosis and in which the constant shows that the other kidney is sufficient but there is nothing to prove that it is intact the kidney known to be tuberculous should not be removed as the other kidney may be affected as much or even more although it does not manifest its involvement so plainly upon clinical examination.

WUDLEY C. MORGAN, M.D.

## BLADDER, URETHRA, AND PENIS

Campbell, M F Bladder Dysfunction Secondary to Nerve Lesions *Canadian M Ass J*, 196 xvi, 1487

Disturbances of bladder function may occur as a reflex from peripheral sources of irritation or may be secondary to lesions of the central nervous system. In some cases, bladder irritation may be cured by removal of the cause of peripheral irritation. In cases of lesions of the cord and especially in tabes, the vesical symptoms are often the first to appear, and their proper treatment is very important in increasing the patient's comfort and prolonging his life even when the nerve lesion is incurable.

The author outlines his treatment of bladder symptoms which is applicable to all cases of cord lesion and particularly to tabes. After the diagnosis is established, urotropin in combination with acid sodium phosphate is given in quantities sufficient to keep the urine alkaline—doses ranging from 10 to 15 gr three times a day to considerably larger amounts. After the amount of residual urine has been determined, every attempt is made to prevent vesical distention and to allow the bladder to regain its tone. If the residual urine is less than 3 oz catheterization twice a week is enough, if it is under 5 oz catheterization must be done every two days, whereas if it is more than 5 oz, catheterization must be done every day. If there is acute retention, catheterization every eight hours is necessary. After the bladder is emptied it is washed out with an antiseptic solution either 1:5000 acriflavine or silver nitrate of the same strength.

While the infection of the bladder is being combated and the amount of residual urine reduced, reeducation of the bladder mechanism is attempted. The bladder is filled and the patient ordered to void. He is then instructed to practice starting and stopping urination several times during each voiding. Although this may be impossible at the first few trials, it is amazing how many patients acquire a new control.

The underlying cause of the cord condition must, of course be treated, and in lues great care must be exercised that the treatment of the late stages is not so useless as compared with that of early syphilis.

HENRY L. SINFORD, M.D.

Hunt, V C Bilocular Diverticulum of the Urinary Bladder *Surg Clin N Am* 196 vi 1153

Diverticula of the bladder are now recognized as a not infrequent cause of urinary difficulty, frequency, and retention. It is probable that in most instances the diverticula are not congenital in origin but result from mechanical obstruction at the neck of the bladder or of the urethra. They seldom occur in the female probably because the short female urethra is very seldom the site of stricture or obstruction which are conditions of frequent occurrence in the male.

The most common site of the opening of the diverticulum is near one of the ureteral orifices, but only rarely does the ureteral orifice empty into or give way to the formation of a diverticulum. The ureter and the wall of the diverticulum are frequently in intimate relationship, but it is rarely necessary to ligate the ureter in order to extirpate the sac. Diverticula are usually single but in about one third of the cases they have been multiple.

Surgical removal is indicated when they fail to empty with the bladder. Geraghty has described a transvesical method which is applicable to diverticula situated in the dome or the lateral walls. The larger diverticula require extravesical extirpation on account of the inflammatory reaction in the peri-diverticular tissues. The best results following extirpation of diverticula are obtained by removing the primary obstruction.

A case of multilocular diverticulum in a man aged 63 years is reported. The opening of the diverticulum was about 1 cm in diameter and situated about 1.5 cm above the right ureteral orifice. The capacity of the diverticulum was twice the capacity of the bladder.

When the diverticulum was elevated for extra-vesical extirpation a smaller diverticulum 5 cm in diameter was found communicating with it; the smaller one was apparently a diverticulum of the larger one.

Hager, B H Clinical Data on Alkaline Incrusted Cystitis *J Urol* 196 xvi 447

Hager reports the results of a further study of alkaline incrustrated cystitis, reviews the literature, and gives an account of the cases seen in the past ten years at the Mayo Clinic. He considers this disease established as a distinct entity. The causative organism is now named 'proteus ammoniae' but was formerly placed with the salmonella. The probable source of this organism is the intestinal tract. Trauma or mild infection is necessary to prepare the field. Clinically, the condition under discussion is characterized by chronicity, the symptoms of severe cystitis and the passage of gritty, alkaline urine containing mucus, pus, and a disproportionate amount of blood. Frank hæmaturia may occur. In spite of the severity of the local disease, the patient's general condition is usually excellent. For diagnosis cystoscopy is invaluable, though generally the bladder is irritable and bleeds readily and its capacity is reduced. Anæsthesia may be necessary.

Inspection reveals single or multiple areas covered with hard incrustations firmly embedded in and adherent to the mucosa. Removal of the incrustations exposes bleeding areas of granulation tissue which may be studded with fine concretions. These areas may be flat or papillomatous in appearance. Between the incrustrated areas a grayish membrane is frequently found on the mucosa. It is composed of mucus cell debris and blood cells and is readily removed by irrigation.

Bladder neoplasm impregnated with urinary salts leucophkia and true vesical calculus must be considered in the differential diagnosis. A biopsy is necessary when a neoplasm is strongly suspected. Leucoplakia has a characteristic appearance. True calculus and incrustated cystitis may coexist.

The merger literature consists mainly of reports of isolated cases. Interest has centered in symptomatic therapy including operative or endoscopic removal of incrustations, local applications to the ulcerated areas, irrigations and attempts to acidify the bladder contents.

At the Mayo Clinic fifty cases have been seen in the last ten years. Thirty four of the patients were females. The average age of the males was 52 years and that of the females 35 years. The latter age is significant as it falls within the child bearing period. The urine was alkaline except in one case in which the disease was limited to two small areas of the bladder neck. All except one of the women were married. The unmarried woman had an associated pyelonephritis. In the case of a boy of 17 years examination revealed a large vesical calculus and a mass of concretions filling the entire urethra. Though the average duration of symptoms in the series was roughly three years, evidence is presented that incrustated cystitis may run a protracted course up to fifteen or twenty years. Infection in the upper urinary tract may coexist though technical difficulties frequently prevent its investigation. Of twenty six cases in which ureteral catheterization was carried out only five showed definite pyelonephritis. The available evidence indicates that in women catheterization and trauma at parturition are contributing factors. In the male the greater incidence of the disease at the age of greatest frequency of prostatic conditions suggests trauma as a factor.

Six patients in the series were completely cured, two died from influenza and twenty six were benefited (disappearance of the incrustations, reduction of the symptoms). Five did not have sufficient treatment and the condition of seven was unchanged. In four cases the condition was inadequately checked before the patient left the hospital. Two patients required suprapubic cystostomy for relief.

The treatment has varied greatly. Bacillus bulgaricus emulsion at first in great favor gave a few good results. Many cases required in addition curette removal of the incrustations with acetic lead irrigations. It is possible that the bulgaricus tablets did not always yield live cultures. Attempts at acidification of the urine by the administration of the usual drugs proved futile. The best results were obtained by removal of the incrustation by curette with the application of strong silver nitrate to the raw areas. The treatment is still symptomatic and the prognosis favorable only when prolonged treatment is possible. Now that the etiology of alkaline incrustated cystitis is understood, there is hope of attaining a specific treatment.

# Cecil H. L. Sarcoma of the Bladder. Report of a Case in Which a Total Cystectomy Was Done. *J. Urol.* 19 6 xvi 471

The author reports a case of sarcoma of the bladder in which a complete cystectomy was done and followed by recovery. He has been unable to find in the literature any similar case with recovery.

The patient's chief complaints were pain in the left kidney and blood in the urine. His family history and personal history were negative. The illness began July 1923—seven months before he consulted the author—with hematuria lasting three or four days. The urine then became clear. Several months later there was another attack of hematuria which was more profuse than the first. Since that time blood had been constantly present in the urine in varying amounts. Two months previously the patient had a severe pain in the left kidney region which radiated down the course of the ureter to the bladder. Three weeks previously he began to have pain in the bladder and pain on urination.

Physical examination was negative except for a mass in the lower abdomen about 12 cm wide and extending about 7 cm above the symphysis. Rectal examination revealed in the region of the bladder a large mass which was soft boggy and painful. The seminal vesicles, vasa deferentia and prostate were pushed downward and backward and apparently not involved. Cystoscopic examination was impossible because the bladder was completely filled with blood. The phenolsulphonephthalein test was 65 per cent at the end of two hours. As the tumor was movable, large and soft a probable diagnosis of sarcoma of the bladder was made. X-ray therapy was advised.

After a month and a half of intensive irradiation the patient's condition became very much worse. There was marked frequency, urination occurring about every fifteen minutes and associated with considerable pain. This persisted night and day. The patient had lost between 30 and 40 lbs. The tumor had grown considerably but was still movable. X-ray examination showed calcareous deposits on the bladder wall. As a palliative measure suprapubic cystostomy was done. The tumor which was blue in appearance and covered with large veins was found to occupy the entire anterolateral and most of the posterior bladder walls. The trigone and vesical orifice were free. There was considerable hemorrhage following the operation. Microscopic examination of the section removed showed sarcoma.

The tumor continued to grow very rapidly and protruded through the wound. Another series of extensive X-ray treatments was given and the tumor was fulgurized on six different occasions. In spite of all it continued to grow and protrude through the wound but at no time showed any tendency to invade the surrounding structures. Because of its rapid growth radical surgery was resorted to. On June 23 the right ureter was implanted about 1½ in above and to the inner side of the anterior superior spine. On July 7 a similar procedure was

carried out with the left ureter. On July 28 a total cystectomy was done. The tissues which were in apposition to the tumor were excised with a wide margin. The bladder was freed by blunt dissection and removed just above the prostate.

The convalescence was rather stormy. The huge cavity left by the tumor required frequent irrigation with Dakin's solution. Toward the end of his convalescence the patient had pain in the left kidney region and a few days later and on several other occasions passed fragments of stone. One year after the operation he was in good health, of normal weight, and enjoying life. The urine was caught by silver cups and collected in a rubber bag worn between the legs. No local recurrence nor metastases could be made out. One year and nine months after the removal of the bladder a large recurrence was found on the left side at the outer border of the rectus. On May 1, 1926 this tumor mass which was firmly adherent to the pubis was removed entirely with the cautery. The pathological examination of the bladder showed the surface to be slightly lobulated. No evidence of ulceration could be made out. The orifices of the ureter and the trigone are not involved. The entire anterior, superior and left lateral walls are involved. Microscopically the tumor was made up of irregularly arranged cells which conformed to two rather different types. Mitotic figures were present but not numerous. The tumor was classed as a fibroblastic sarcoma.

Pathologically sarcomata of the bladder vary from small polypoid masses to large papillomatous or smooth masses. They are occasionally covered by normal mucous membrane. Ulceration is rare. The tumors occur more frequently in the very young and persons past middle age. Tumors having a pedicle generally have a very wide pedicle which involves the bladder wall and apparently arises from the submucosa or intermuscular substance. The growth of the tumor is characteristically very rapid. Most authorities believe that these very malignant tumors metastasize rather late. They usually arise close to the vesical orifice or on the trigone and very commonly invade the ureters. The microscopic picture varies considerably in different cases. All of the growths are very vascular. Cecil has been unable to find mention of a case in which tumor cells were found lying within a blood vessel wall. The most common type has been the round cell sarcoma. The cause of death in these cases is the toxæmia which results from the infection in the bladder and kidneys.

Of the various symptoms, pain is the most prominent. It is usually associated with urination. Because of the relatively late occurrence of ulceration, hæmaturia is apt to be a late symptom, but is usually marked. An early diagnosis is even more important in sarcoma than in epithelial tumor of the bladder as the former is much more malignant than the latter. The symptoms of the two conditions are very similar. Cystoscopic examination offers the most help in the diagnosis. If the cystoscopic ex-

amination alone is not sufficient, microscopic examination of a piece of tissue excised from the tumor will probably clear the diagnosis. Before any radical treatment is attempted roentgenograms of the skeletal system should be taken to rule out metastases.

Complete resection is the only method of treatment which offers any hope. The adjacent tissues should be removed with the tumor. X-ray and radium irradiation should be tried only in cases which are inoperable. In the late cases which do not respond to irradiation, total cystectomy is the only treatment. In the performance of cystectomy the disposition of urine is a problem. Theoretically the most ideal procedure is a nephrostomy but this is a very uncomfortable type of wound. In the author's case, ureterotomy gave good results. Of the various complications due to marked involvement of the surrounding tissues pyelonephritis is the most common. In all but eight cases, the treatment of sarcoma of the bladder has been unsuccessful. Of three patients subjected to total cystectomy two died.

ALTON OCHSNER, M.D.

Cassuto, A. Explosion in the Bladder in the Course of an Electrocoagulation (Explosion dans la vessie au cours d'une électrocoagulation). *J. d'urolog. med. et chir.* 1926 xviii 63.

The author was destroying a hypertrophied middle lobe of the prostate by electrocoagulation with a MacCarthy cysto urethroscope when a loud explosion suddenly occurred. As the tumor was rather large and not very vascular he was using a current of 400 ma. When the accident happened he had closed the irrigating part of the apparatus, leaving about 150 c.c. water in the bladder. After the explosion he carefully withdrew the cystoscope and injected a small amount of water. All of the water returned showing that there was no rupture of the bladder. He therefore decided on expectant treatment instead of immediate operation. No signs of peritonitis or phlegmon of the space of Retzius developed. There was only a little more hæmaturia than is normal in such operations, the bleeding continuing until the fifth day. A cystoscopic examination on the eighth day revealed a red and adenomatous mucous membrane with deep fissures.

The current used in electrocoagulation causes the formation of many small gas bubbles which can be seen clearly through the cystoscope. The author believes that these gas bubbles are a product of the disintegration of cells. The gas is evidently of a type that explodes readily when a certain volume of it accumulates in the bladder and is acted upon by a current of a certain intensity. In the use of endoscopes with continuous irrigation of the type employed by the author the gas bubbles are usually carried off by the return current of water. Cassuto attributes the accident in his case to the use of a current of 400 ma. and the fact that he had cut off the irrigator leaving from 100 to 150 c.c. of water in the bladder. To prevent such accidents he



recommends that not more than from 300 to 350 ma be used and that the irrigation be kept up continuously. He regards currents of 500 ma as very dangerous. The failure of the explosion to cause rupture of the bladder in his case was explained by the fact that there was only a small amount of water in the bladder and not much gas had accumulated.

Three months after the accident the patient reported that he was in excellent condition and his bladder emptied completely.

AUDREY G. MORGAN, M.D.

**Fedoroff S. P. Total Excision of the Bladder for Malignant Tumor** (Sur la question l'ablation totale de la vessie dans les cas de tumeurs malignes) *J. d'urologie méd. et chir.* 1926 xxi 370

Fedoroff urges more radical treatment of malignant tumors of the bladder. Total excision of the bladder is not a complicated procedure and if it is done in two stages is not especially dangerous. In the first stage the ureters are transplanted preferably into the lower curvature of the sigmoid colon. In the second stage performed two or three months later the bladder excision is done.

The author reports twelve cases, all of which were neglected cases. Pyelitis had developed in eleven. In two the pyelitis caused death. Two patients died before the second stage of the operation was performed. Two died of a generalized metastasis, one of them after five years and the other after one year and two months. Two deaths were due to accidental causes not attributable to the operation. In all there were eight deaths. Of the four living patients, two are in perfect health six years and two years respectively after the operation. The two others who were operated upon about a year ago have pyelitis.

Fedoroff maintains that even in cases of small carcinoma with few signs of infiltration, total excision of the bladder offers surer relief from suffering and prolongation of life than any other operation.

MICHAEL L. MASON, M.D.

**Dubouché and Michon. A Case of Traumatic Rupture of the Perineal Urethra Treated by Immediate Urethrorrhaphy** (Un cas de rupture traumatique de l'urètre périméale traité par l'urethrorrhaphie immédiate) *Bull. et mém. Soc. nat. de chir.* 1926 lvi 1214

A young man sustained a rupture of the perineal urethra in a fall in which he landed astride of a beam. The injury was followed by severe pain, a bloody urethral discharge, retention of urine and swelling of the perineum. At operation performed immediately suprapubic cystostomy was followed by repair of the urethra. The latter was extremely difficult because of the continuous bleeding, the crushed and friable condition of the tissues and the difficulty in finding the perineal end of the urethra. It finally became necessary to re-open the bladder incision and employ retrograde catheterization. The

catheter was made to bridge the defect in the urethra and an end-to-end suture was done.

Healing took place by first intention and the cystostomy closed at the end of forty days. The end result was good.

It is considered advisable to repair perineal lacerations of the urethra immediately. Simple cystostomy is inadequate. While it is sufficient in the majority of ruptures of the membranous urethra, involvement of the perineal portion requires incision, the evacuation of clots and end-to-end repair.

LEO M. ZIMMERMAN, M.D.

**Verriollet T. and Debrise A. Inflammatory Neoplasms of the Posterior Urethra in Chronic Gonorrhoea** (Sur les néoplasmes inflammatoires de l'urètre, postérieurs au cours de la blennorrhagie chronique) *J. d'urologie méd. et chir.* 1926 xxi 273

Inflammatory changes in the posterior urethra, especially those due to gonorrhoea, show two types of endoscopic picture. In the first there is an inflammatory erythema and in the second there are destructive processes causing craters or proliferating processes producing excrescences.

There are two kinds of excrescences: one due to oedematous infiltration and the other due to hyperplasia of the epithelial cells and the subepithelial connective tissue. The excrescences from oedematous infiltration look like those of bullous oedema but are vascularized and less transparent. They are seen in the first stages of subacute inflammation or in the beginning of recurrences. The excrescences due to hyperplasia are papilliform or polypoid and the latter may be sessile or pedunculated. They are found almost anywhere in the posterior urethra and around the orifice of the bladder and more rarely in the membranous urethra. They are generally smooth and almost transparent or slightly villous and sometimes covered with pseudo-membranes.

The sessile hyperplastic masses are more fleshy, in consistency generally pyriform and a grayish rose in color. They range in size from that of a millet seed to that of a grain of rice. It is sometimes difficult to establish a differentiation between the papillomatous excrescences and papillomata of non-inflammatory origin, even on microscopic examination. The histological appearance of these different forms of excrescences is described in detail. The different forms are manifestations of different stages of the inflammation: the excrescences from oedematous imbibition being the first stage due to erythema of the mucous membrane and the papilliform excrescences and the polypoid masses sessile and then pedunculated representing the successive stages of the inflammation.

As these inflammatory new growths are so closely related to the bladder, prostate gland and seminal vesicles, the symptoms may be due to irritation of any of those parts and are therefore not specific. Bladder, genital or psychosexual symptoms may be the first to suggest the presence of such a chronic inflammation. The best treatment is the removal

of the new growths with the cautery, but even when this is done they occasionally recur

AUDREY G MORGAN, M.D

Gautier, E L and Chevassu M Four Different Forms of Urethral Polyps and Papillomata (Quatre formes différentes de polypes et de papillomes uretraux) *J d urol med et chir* 1926 xxii 314

Four kinds of papillomata seen on urethroscopy of the posterior urethra are described (1) the ordinary form with a single pedicle (2) a form with multiple pedicles, (3) a subacute form with many different elements each having a pedicle and (4) an acute diffuse papillomatosis involving the whole anterior urethra. A case of each type is reported and the urethroscopic appearance of each is shown by a colored plate

Chevassu, who reported Gautier's cases, called attention to the fact that they were probably all of inflammatory origin. Case 3 presented interesting evidence of this, for passing backward from the glans to the membranous part of the urethra the papillomata gradually changed in character from the diplo to the pedicled form. In Case 2 the papillomata resembled bladder papillomata. Chevassu does not approve of the name "multiple pedicled" selected by Gautier for though there were many papillomatous processes they seemed to rest on a common pedicle. He suggests the term fringed papilloma. Because of its resemblance to a bladder papilloma, he thinks the growth was probably a urethral graft from a bladder tumor but Gautier's report unfortunately does not tell anything regarding the condition of the vesical mucous membrane

Ultraviolet rays had an excellent effect in one of these cases and the passage of Benique sounds in another. This substantiates the theory of their inflammatory origin, but it is impossible to say why a subacute or chronic inflammation sometimes causes proliferation of the urethral mucous membrane. It is certain, however, that such proliferations in a case of urethral infection cause the infection to persist indefinitely, and in any chronic urethral suppuration that does not yield to the ordinary treatments a urethroscopic examination should be made. Gautier particularly likes Luys' apparatus but for most cases Chevassu prefers the apparatus of MacCarthy

AUDREY G MORGAN, M.D

Kretschmer H L and Fister G M Plastic Induration of the Penis. A Report of Sixteen Cases *J Urol* 19 6 xvi 497

The authors review the present day knowledge of plastic induration of the penis and briefly discuss the course pathology and differential diagnosis of the condition. The prognosis is good in that the disease is usually self limited but poor in that it is not commonly cured. A few cases have been cured by fibrolysin injections, X ray or radium irradiation, or operation but on the whole, treat-

ment is not satisfactory. In a small percentage of the cases there is a tendency toward spontaneous recovery

Sixteen cases are reported and a bibliography is given

JOHN G CHEETHAM M.D

## GENITAL ORGANS

Lazarus J A Deep Roentgen Therapy in Disease of the Prostate Gland *J Urol* 19 7 xvii 37

Important factors producing urinary obstruction in adenoma of the prostate are congestion and edema of the mucous membrane. The author has found that X ray irradiation reduces the congestion and relieves the urinary symptoms but does not reduce the size of the prostatic tumor decrease the amount of residual urine or sterilize an infected prostatic focus

MAURICE MELTZER M.D

Pugh W S Surgical Aspects of Chronic Prostatitis *Med J & Rec* 1927 cxxv 103

The author advocates the surgical treatment of chronic prostatitis by the various forms of urethroscopic manipulation. A definite decision as to the extent of the pathological change is impossible without a cysto urethroscopic examination. A very frequent cause of persistent prostatitis is the presence of polypoid masses. In order to obtain a cure such masses must be eradicated. Occasionally prostatectomy is indicated in these cases

J SYDNEY RITTER M.D

Goldstein A E Bilateral Ligation of the Vas Deferens in Prostatectomy *J Urol* 19 7 xiii 25

Goldstein advocates bilateral vasectomy in prostatectomy to reduce the complication of epididymitis to the minimum. Bilateral vasectomy is best performed in the scrotum. A section measuring from  $\frac{1}{2}$  to 1 cm should be removed to prevent anastomosis. It is always advisable to do this before draining the bladder. In a series of cases so treated epididymitis occurred in only 4 per cent. No effect of the procedure on sexual power was noted

MAURICE MELTZER M.D

Marion G An Intervesicoprostatic Diaphragm After Prostatectomy (Le diaphragme intervésicoprostatique après la prostatectomie) *J d urol méd et chir* 1926 xxii 237

Sometimes difficulty in urination develops again after a prostatectomy. A sound cannot be passed. The obstruction may be due to a diaphragm formed between the bladder and the bed of the prostate. When a perurethral adenoma protrudes into the bladder the summit of the protrusion is covered by very thin bladder wall which is much more easily torn than the normal bladder wall back of the adenoma. In the enucleation of the adenoma the break in the bladder wall should be made around the circumference of the adenoma for if it is made at the vertex of the tumor the flap covering the

protruding part will be left and may form a diaphragm. Dysuria some months after a successful prostatectomy may be due to such a diaphragm or to an aberrant adenoma overlooked at operation. An aberrant adenoma however can be palpated through the rectum and will allow the passage of a sound into the bladder. Another lesion that may simulate a diaphragm is a constriction of the posterior part of the urethra just below the point at which the latter enters the body of the prostate. In such a case the constriction is lower than when a diaphragm is present.

The author has devised a cutting Benique sound for the removal of interscicoprostatic diaphragms. During the introduction and withdrawal of the sound the blade is enclosed within it. After its introduction the blade is released by means of a wheel. Marion has operated successfully with this instrument in four cases. In some cases it may be necessary to open the bladder for the resection.

AUDREY G. MORGAN M.D.

Thomas B. A. and Birdsall J. C. Vasopuncture Versus Vasotomy Relative to Stricture Formation. An Experimental Study on Dogs. *J. Urol.* 1916 111: 529.

Of eighteen vasotomies performed on dogs 55 per cent were followed by occlusion of the vas whereas of twenty vasopunctures only 5 per cent were followed by occlusion. A 5 or 10 per cent solution of collargol seemed to be a safe antiseptic for use in the vas providing there was no extravasation into the spermatic cord.

As the traumatism to the vas and the subsequent regurgitation and infiltration of the collargol into the spermatic cord produced occlusion in over 50 per cent of the operations reviewed it is evident that vasotomy with the use of a 5 or 10 per cent solution of collargol should be performed with great caution. According to the findings of experiments vasopuncture seems to be preferable to vasotomy.

JOHN C. CHEETHAM M.D.

### MISCELLANEOUS

Lowsley O. S. and Butterfield P. M. Urological Conditions Among Children. *J. Urol.* 1926 111: 115.

In an investigation of urological condition in children every effort was made to arrive at a diagnosis before resorting to cystoscopy. All renal infections were studied bacteriologically and treated by various antiseptics. For cystoscopic examination of children Butterfield has devised a double catheterizing cystocope. The authors believe that cystoscopic examination is as important in the cases of children as in those of adults. In a large percentage of the cases of children however the use of an anesthetic is necessary.

Severe reactions such as chills, fever, vomiting and urethral pain which are common in adults do not occur in children.

The history is taken carefully in all cases and a complete examination is made by a pediatrician. A complete examination of the urine and an X-ray examination of the genito-urinary tract are made routinely. If the urine shows infection alkalies are administered and the bladder is lavaged with acriflavine. If there is no response to this therapy urotropine and acid sodium phosphate or hexylresorcinol is used. In some cases an autogenous vaccine is employed.

Local anesthesia is indicated for older children while nitrous oxide or ethylene is used for younger children. The youngest male subjected to a cystoscopic examination in the authors' clinic was 11 months old. In the making of a pnelogram in the case of a child under general anesthesia, 5 cc. of a 10 per cent solution of sodium iodide is introduced.

The technique of sacral anesthesia does not differ from that used for the adult except that the sacral hiatus is located somewhat higher than in the adult. Twenty five cubic centimeters of a freshly prepared 1 per cent solution of novocaine is injected into the canal through the first second third fourth and fifth sacral foramina according to the technique of Labat.

In 100 cases of urological symptoms in children the following diagnoses were made: incontinence of urine (enuresis) in thirty seven, undescended testicle in eleven, stenosis of the meatus in five, hernia in five, hypospadias in two, spina bifida in three, congenital malformation of the posterior urethra in two, epispadias in one, pyogenic renal infection in nine, tuberculosis of the kidney in four, no pathological condition in seven, vaginitis in four, stricture of the ureter in three, perinephritic abscess in two, calculus in two, acute nephritis in one, lues in one and venereal warts in one.

Seventy of the patients were males. The average age of the patients was 8 years. The youngest patient was 11 months old and the oldest 16 years.

In the cases with enuresis all specimens of urine were found sterile. The patients were given an alkaline diuretic and a special diet. The head of the bed was raised. An afternoon nap was enforced and water was withheld after 5 p.m. At 10 p.m. and a.m. the child was awakened for urination.

The children who did not respond to this therapy were given acid preparations, atropin and glandular products. Instillation of various solutions, irritating and non-irritating was done. In a few cases 30 cc. of normal salt solution was injected into the sacral canal.

The results have been far from satisfactory. By the various procedures mentioned a cure has been obtained in only eight cases and improvement in seven. The authors believe that in every case which does not respond to treatment there is some underlying pathological condition and a careful endoscopic examination is necessary.

In discussing congenital anomalies the authors state that operative procedures should be avoided in the cases of children under 4 years of age as such

young children do not stand ether anaesthesia well and as their cooperation cannot be expected local anaesthesia is impossible. A circumcision should be done in the first few weeks of life. Meatotomy may be carried out under local anaesthesia induced with 4 per cent cocaine. This is a very valuable procedure when there is a stenosis at the external meatus which interferes with drainage. Hydroceles usually occur in persons who have worn a truss or who had a trauma to the scrotum or its contents or a pathological process in the epididymis. Counter-irritation will usually effect a cure. In cases in which an excision of the hydrocele sac is necessary, the incision is made as for hernia. After evacuation of the sac the excess is cut away and the edges are approximated behind the testicle.

In undescended testicle the high position of the testicle is caused by the shortness of the portion of the cord which contains the blood vessel due to fascial bands surrounding the blood vessel. The vas deferens and the vessels themselves are long enough. A careful dissection should be made and these fascial bands separated from the vessels so that the testicle may be replaced in the scrotum and anchored there. The authors operated in this manner successfully in eleven cases.

In the two cases of hypospadias a preliminary suprapubic cystostomy was done. A quadrilateral incision was made on the ventral surface of the penis beginning just anterior to the misplaced meatus and extending back to the base of the penis. A new elongated urethra was constructed around a catheter with the structures on the ventral surface of the penis. The glans penis was split entirely in two parts the elongated urethra sutured at the apex of the glans penis and the wound closed. The catheter was removed as soon as the repair was complete. The suprapubic fistula was kept open for ten days.

The authors report one case of spina bifida with urinary incontinence which they have operated upon successfully. Through a suprapubic incision a triangular piece was excised from the dilated vesical orifice and the wound sutured tightly over a No. 10 French catheter.

Congenital malformation of the posterior urethra is attributed by the authors to an anomaly of the wolffian and müllerian ducts. In the first of their two cases that of an infant aged 3 1/2 months autopsy showed that the verumontanum instead of disappearing by spreading out on the floor continued down to the membranous urethra where it divided into two portions and attached itself intimately to the entire urethral circumference. A very small slit-like opening was found on the floor of the urethra just to the left of the median line. The second case was that of an infant aged 14 months who evidently had considerable pain on attempting to void. The passage of a urethral bougie into the posterior urethra produced a tearing sensation. After several dilatations with the bougie the patient was cured.

In a case of complete epispadias with separation of the symphysis in a 6 year-old boy a finger could be inserted into the bladder without any resistance. Through a suprapubic cystostomy a V shaped piece was retracted from the neck of the bladder a No. 10 catheter introduced and suction drainage applied. Three months later the patient was able to hold his urine for two hours at a time and to tell when he wished to urinate. Four months after the first operation the urethra was repaired according to Young's technique. Subsequently a small sinus developed on the dorsum of the penis but this was repaired. At the present time two years later the patient is perfectly well.

Lowley and Butterfield do not regard pyelitis as an entity. They believe that cases exhibiting local and systemic reactions have a pyelonephritis or pyonephrosis. Free drainage is essential in the treatment of all cases. Therefore every patient with chronic pyuria should be subjected to a complete examination of the renal pelvis, the ureter, the bladder and the urethra. Of the authors series of nine patients with kidney infection seven were females. Six left the clinic before any treatment could be instituted of the remaining three one was apparently cured by hexylresorcinol and later suffered a relapse and the two others with non-haemolytic streptococcus infections were not benefited by alkali therapy, the administration of urotropin and hexylresorcinol or vaccines. The authors experience with hexylresorcinol has been rather disappointing.

While the authors have been able to had only forty cases of renal tuberculosis reported in the foreign literature and twelve in the American literature they have seen four cases. They believe that tuberculosis of the kidney is not such a rare condition as was previously thought. Many of the chronic pyurias in infants and children are probably caused by tuberculosis. In two of their cases a secondary infection was found—a bacillus coli infection in one and an infection by the staphylococcus albus in the other.

Case 1 was that of a 13 year-old girl who complained of frequency of urination and marked pyuria. A right nephrectomy resulted in a cure.

Case 2 was that of a boy 14 years old who was admitted to the hospital with a diagnosis of acute appendicitis. His complaints were frequency of urination, dysuria and nocturia. A right nephrectomy brought about a cure.

Case 3 was that of a girl 11 years of age who gave a history of frequency of urination, pain in the left flank and marked pyuria. Guinea pig inoculations were positive for tuberculosis. A cure followed removal of the left kidney.

Case 4 was that of a 6-year-old girl whose chief complaints were frequent urination and pyuria. Tubercle bacilli were found in the bladder urine. This patient was lost sight of.

In seven cases with a chief complaint of frequent and painful urination no pathological changes could be demonstrated. Three cases of ureteral stricture,

which occurred in girls having sterile urine were completely relieved by dilatation of the ureter. Perinephritic abscess is a common complication of tuberculosis of the kidney in children. In the authors two cases however, the condition followed an infection elsewhere in the body. Recovery was obtained in both after evacuation of the pus.

According to the literature the incidence of urinary calculi in infants and children is not low. Pain and colic, hæmaturia, pyuria, frequency of urination, dysuria, nausea and vomiting should lead to a thorough urological examination. In the case of a male infant 11 months old who was examined by the authors the chief complaints were abdominal pain and frequency of urination. Vesical calculi were found cystoscopically. The X ray revealed calculi in the left kidney and ureter. Following suprapubic removal of the bladder calculi an uneventful recovery resulted. Unless symptoms are caused by the calculi in the ureter, Lowsley and Butterfield believe the infant should be kept under observation until it is at least 4 years old. In the case of a boy 10 years of age there were two attacks of pain in the right flank and along the course of the right ureter accompanied by hæmaturia. The urine showed a large quantity of uric acid but X ray examination was negative. Permission for a cystoscopic examination was refused but the authors believe the case was one of uric acid calculus.

A case of lues in a 12 year-old girl complaining of pain in the right kidney was cured by specific treatment.

In conclusion the authors state that children with a history of urological symptoms persisting for some time should be given a complete urological examination.

ALTON OCHSNER M D

**Duvergey Dax and Ramarony Vaccination in Gonorrhœa. Result in 202 Cases of Antigonococcus Vaccination.** (Contribution à l'étude de la vaccination dans la blennorrhagie résultat de 202 cas de vaccination antigonococcique) *J d urol méd et chir* 1926 **XXII** 322

The authors have used the stock vaccine of the Pasteur Institute in 175 cases of gonorrhœa and an autovaccine in twenty seven cases. In their dosage they followed the directions of the Pasteur Institute beginning with  $\frac{1}{4}$  c cm giving  $\frac{1}{2}$  c cm three days later and then injecting 1 c cm every other day. They did not give any local treatment unless there were complications. In the majority of cases they administered only one series of injections.

They divide their cases into those of acute urethritis, those of subacute urethritis, those of

chronic urethritis and those of urethritis with local complications such as prostatitis, epididymitis and cystitis, and those with general complications such as arthritis.

They treated twenty nine cases of acute urethritis. In four the condition was aggravated in eighteen it remained unchanged in five it was ameliorated and in two it was cured. In sixty three cases of subacute urethritis there was aggravation of the condition in five no change in twenty two improvement in twenty and a cure in sixteen. Of the fifty eight cases of chronic urethritis treated with stock vaccine twenty six were unchanged, improvement resulted in fifteen and a cure was obtained in seven. There were twenty five cases of complicated urethritis. The eight cases of epididymitis among these did not seem to be affected at all. In ten cases of chronic prostatitis there was considerable improvement. In four cases of rheumatism the pain stopped after one or two series of injections. One case of arthritis of the knee with effusion and a tendency toward ankylosis was cured by three series of injections.

The autovaccines were used only in cases with a duration of months or years. Of twenty seven cases of this type ten showed no change, nine were benefited and eight were cured.

Thirty four patients had a moderate fever after the injections. In a few cases it was necessary to stop the treatment on account of high fever and vomiting. In some cases there was quite intense pain. In four abscesses developed but there were no bacteria in the pus.

While the method did not give any appreciable result in acute urethritis it resulted in a cure in 28 per cent of the subacute cases and 26 per cent of the chronic cases. The autovaccine gave a cure in 31 per cent and as it was used only in the oldest cases it seems to have been more effective than the stock vaccine.

Vaccination had no effect on epididymitis but hastened the cure of chronic prostatitis when it was used in association with the usual treatment. Three cases of epididymitis and six cases of cystitis developed in the course of vaccine treatment without preceding lavage or instillation. A method which results in a cure in only 26 per cent of cases and does not prevent certain complications cannot be considered extraordinarily effective. However while it is insufficient alone it seems to be a valuable supplement to the local treatment of gonorrhœa as patients who received vaccine recovered more quickly later under irrigation treatment.

AUDREY G MORGAN M D

# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

Robertson D E Acute Hæmatogenous Osteomyelitis *J Bone & Joint Surg* 19, 1x 8

Rodet, in 1884, produced bone abscesses without trauma by the intravenous injection of staphylococcus aureus. Lexer found that large doses of an emulsion of living staphylococci injected intravenously into young rabbits caused death in twenty-four hours, while smaller doses produced abscesses in the viscera, muscles, bones, and joints. The abscesses in the bones were most commonly situated in the broad extremity of the diaphyses. The most common sites were the lower end of the femur and the upper end of the tibia and humerus.

Hobo cites Koch as demonstrating that the localization of infection from intravenous inoculation occurs most frequently in the epiphyses, the metaphyses, and the periosteal vascular region. Dumont produced typical osteomyelitis in young animals by the use of staphylococcus aureus from a furuncle. Two hours after the injection the organisms were found in veins of the metaphysis. He believed that they remained active and grew in the metaphysis and became the center of inflammation. Hobo believes that there is a marked slowing of the blood stream in the metaphysis due to the very small branching of the arteries. The medulla, on the other hand, is very rich in blood channels. He believes that the medulla is much richer also in phagocytic elements than the metaphysis. From these points the organisms emigrate into the metaphysis.

The experimental production of osteomyelitis seems possible only in young animals. Lexer states that older animals, like older persons, develop arthritis in the presence of blood infection.

In an attempt to verify some of the experimental work cited the author conducted a series of experiments on young rabbits. Three of these experiments are described.

In one, 3 c cm of an emulsion of staphylococcus aureus made from a culture obtained from a case of acute osteomyelitis in a boy were injected into the vein of the ear. Two hours after the inoculation, sections of the long bones showed a most active phagocytosis throughout the epiphysis and the medulla. Very few cells containing organisms were found in the metaphysis.

In another experiment, an animal treated as in the first experiment was killed two weeks after the inoculation and the femur then incubated for thirty-six hours. Staphylococci in large clusters were found throughout the bone and were especially numerous in the epiphyses and the medulla and the metaphyses. Large groups were found also in the periosteum.

In the third experiment reported the animal was allowed to live for a week after the inoculation. Necropsy then revealed abscesses in the viscera, muscles, joints and bones and sections of the long bones showed definite abscess formation in the epiphyses, metaphyses and periosteum. The medulla while injected, showed no tissue reaction or abscesses.

From these findings, the following conclusions are drawn:

1 Organisms introduced into the blood stream are deposited, among other places, in the long bones.

2 In bones, there is a very active phagocytosis except in the metaphysis.

3 The organisms produced inflammatory centers in the metaphysis independent of trauma.

4 It is impossible to produce a general infection of the medulla by the simple inoculation of organisms into the blood stream.

5 Trauma may determine a local infection.

6 Growing bones develop abscesses of the type of osteomyelitis. Adult bones do so but rarely. In the presence of a bacteræmia in an adult, arthritis may develop.

The infection enters the blood stream through broken or diseased mucous membrane or skin. It was demonstrated experimentally that when small doses of an organism were given the reaction was less violent and localization occurred.

From the experimental work that has been done it appears that trauma is not an essential factor in the production of the disease, but from the clinical standpoint there seems to be no doubt that trauma produces or is closely related to, the initial bone lesion. The trauma is usually an injury to the epiphysis.

Acute hæmatogenous osteomyelitis is seen most frequently in children between the ages of 10 and 15 years and is more common in boys than in girls. There is usually a history of an injury to a joint or its region causing interference with function for a few hours or a day. An examination for lesions of the skin and mucous membranes should be made.

The first symptom of the bone infection is stiffness and pain at the site of the previous "sprain." Within twelve hours the pain becomes very severe and there is definite local tenderness over the metaphysis of the bone. The temperature and pulse show a considerable increase. During the second twelve hours all of the symptoms are increased and, in addition, there is a local edema which later becomes reddened. Multiplicity of bone lesions occurs in over 75 per cent of the cases. A diagnosis of acute hæmatogenous osteomyelitis cannot be based on the blood count since even in very severe cases the leucocyte count may be low. In the first days the roentgenogram will not aid in the diagnosis.

This disease must not be confused with acute rheumatic fever. Multiplicity of lesions is common in both conditions. In rheumatism the pain is less constant and the history is different.

The diagnosis of an infection of the upper epiphyses of the femur must be made by aspiration of the hip joint.

The treatment is obviously surgical. Drainage of the lesion is indicated. In early cases an incision is made down to the periosteum over the affected part and drills are passed into the metaphysis parallel with and close to the epiphyses. If one of these drills taps the inflammatory center it is essential to remove a small window from the cortex of the bone and leave the wound well open to establish free drainage. If the case is one that has gone on for days drainage of the medulla may be necessary. Infection of the neck of the femur calls for drainage through the capsule and along the neck at its base. A careful watch must be kept for the appearance of lesions in other bones. These must be drained as soon as they are recognized.

NORMAN C. BULLOCK, M.D.

Chiasserini, A. Chronic Abscess of Bone (I ascesso cronico delle ossa). *Chir. d. organi di movimento* 1926 XI 1.

About 200 cases of chronic bone abscess have been reported. The author reports seven cases of his own. In three of his cases the abscess was preceded by acute osteomyelitis in two by typhoid in one by pyæmia and in one by an undetermined febrile disease.

The time from the primary disease to the operation for the abscess ranged from three to thirty one years.

In Gross' collection of 141 cases the ages of the patients ranged from 21 to 27 years at the time of operation but in 100 of them the symptoms had been noted twelve or more years before showing that the disease began in childhood or adolescence.

There was a history of trauma in only one of the author's cases. In three the pus yielded staphylococcus aureus and in one typhoid bacilli. In three it was sterile. In two of the cases reported in the literature colon bacilli were isolated.

Chronic bone abscess or Brodie's abscess is generally found in the metaphyseal epiphyseal region of the long bones particularly that of the tibia. In five of the author's cases it was in the tibia. It generally begins in the metaphysis and extends toward the epiphysis rather than the diaphysis. It involves the joint only rarely. The largest abscess in the author's cases was the size of a mandarin orange but Thomson reports a case in which the abscess contained 500 ccm of pus. The abscess generally has a pyogenic limiting membrane. The bone for a short distance around it is usually increased in density but the absence of sclerosis does not exclude an abscess of bone as some cases have been reported in which the surrounding bone was softened.

The relationship between the primary febrile disease and the secondary abscess is manifested by the localization of the latter or by the finding of the same bacteria in the two conditions. The first symptom of abscess is a vague intermittent rheumatoid pain which increases in intensity. The intermissions may last for months or years. If an intermission follows immobilization or specific treatment the patient may erroneously believe himself cured. The pain is followed by local swelling which may also be intermittent. The disease is generally afebrile but there may be attacks of fever. The leucocyte count is generally normal. The skin over the abscess may be normal or slightly red. The local temperature is generally increased and there may be oedema. Palpation causes pain and may reveal a certain increase in the size of the bone. There are generally no joint symptoms. In some cases there is a lengthening of a centimeter or more.

Röntgen examination shows a local rarefaction with its longest diameter in the direction of the long axis of the bone. The rarefaction is so intense as to suggest a cavity in the bone. Its outlines are clearly defined quite regular and in many cases surrounded by a thin line of dense bone. Generally the end of the bone in which the abscess is located is enlarged. The diagnosis can generally be made from the roentgen findings.

The simplest treatment and the one which has been used in the majority of cases consists in opening the abscess with a gouge emptying the pus removing any limiting membrane that may be present and tamponing. In order to shorten the drainage time some surgeons have broken down the lateral walls of the abscess to decrease its depth and laid pedunculated grafts of periosteum and skin over the inclined plane formed in this way. This shortens the time required for treatment even if the flaps retract but it sometimes causes considerable local deformity. When there is not much suppuration it may be possible to close the soft tissues without drainage. In such cases the abscess cavity is generally filled with Beck's or Moseley's paste a mixture of hard paraffin and wax or grafts of fat or muscle. It is advisable to supplement the surgical treatment with the use of autogenous vaccines.

AUDREY C. MORGAN, M.D.

Stone, C. A. Ossifying Hematoma. *J. Am. M. Ass.* 1926 LXXXIII 1883.

STONE reports six cases of ossifying hematoma. He believed that these tumors were produced by a blow sustained during muscular relaxation which allowed the force of the blow to be delivered almost entirely against the bone. To test this theory he carried out a series of experiments on dogs. In these experiments a blow was struck across the anterior surface of the femur on one side during the struggling of the animal before complete anesthesia when the thigh muscles were tense and against the other femur after relaxation was complete. In no case was an ossified hematoma produced.

Of the six cases reported, all followed a single trauma sustained during athletic competition. A hematoma was formed and later grew smaller and ossified. The tumors consisted of bone entirely covered with periosteum. In every case, ossification took place within two months. In one case there was a tumor in each femur, a fact suggesting an inherent tendency toward such formations.

FREDERICK A. JOSTES, M.D.

**Goforth J. L. Giant Cell Tumor of Bone** *Arch Surg* 1916 **VI**, 846

The benign giant cell tumor, the most common of the central bone lesions, occurs characteristically in the epiphyses of the long bones of young adults. The initial symptoms are swelling and pain. The condition progresses slowly. After from three to eighteen months the chief complaint is a disturbance of function. The roentgenograms show circumscribed, diffusely mottled, rarified areas produced by the bone absorption of the expanding growth.

While we are familiar with the clinical, roentgenological, pathological, and histological characteristics of giant cell tumors, our knowledge of their true nature, behavior, and course remains far from complete and our interpretation of their structure is quite unsatisfactory. Barrie regarded these tumors as local, chronic inflammatory processes while others consider them true neoplasms. The giant cells have been believed to be of bone, marrow, foreign body, or endothelial origin, but some investigators consider them osteoclasts. Bloodgood, Codman, Meyerding, and others regard the giant cell tumor as benign, but there is evidence that they may invade and destroy nearby tissues and in rare cases may even form metastases.

In the author's opinion, giant cell tumors should be classified as true neoplasms. They constitute a series. Those at the lower end of the scale possess relatively adult fibrous stromas and are essentially benign. Under the stimulus of inadequate or improper treatment they may recur locally, those at the upper end of the scale being especially liable to do so. Such recurrences are usually more virulent than the primary growth. They are potentially malignant and as the result of repeated or improper treatment undergo malignant transformation and metastasize.

DANIEL H. LEVINTHAL, M.D.

**Jepson P. N. Ischæmic Contracture** *Ann Surg* 1926 **LXXIV**, 783

Ischæmic contracture follows an injury to the extremities, usually the upper extremity. Fixation by some method or by tight bandaging causes severe pressure on the injured structures which is followed in a short time by swelling, blueness of the extremity, paræsthesia and more or less pain. If the arm has been injured this is followed by severe contraction of the wrist and fingers and finally by the claw hand deformity. There may be disturbances in sensation in areas supplied by the ulnar nerve and sometimes in the area supplied by the median or radial nerves.

Volkman believed that the muscular tissue is deprived of arterial blood and in consequence the muscle perishes from want of oxygen.

The credit of calling attention to ischæmic contracture and establishing it as a true entity belongs to Leser who investigated the condition experimentally and gave a comprehensive and detailed account of his findings. Thomas, Bernhardt, Kohner von Frev, and others believed that the paralysis follows the use of an elastic bandage which results in flaccid paralysis and contracture of the muscles due to injury to the nerves at the time of the accident or subsequently. Some writers have maintained that the contracture is due to the scar tissue resulting from pressure sores, but this is disproved by cases in which the typical deformity of the Volkmann-Leser contraction has developed without pressure sores.

So far as Jepson was able to determine, the mechanism of ischæmic contracture as seen in man has never before been reproduced in an animal. For this reason the experiments carried out at the Institute of Experimental Medicine of the Mayo Foundation are reported.

Dogs weighing approximately 12 kgm. were used in all of the experiments. The lesion of ischæmic paralysis as seen in man was reproduced in the animals by bandaging one extremity and preventing the return of the venous blood. In an attempt to prevent the development of the deformity it was found that if drainage was instituted within a few hours after the procedures which caused the lesion, contracture did not occur or was very slight. The results of these experiments seem to indicate that the contracture deformity is due to a combination of factors, the most important of which are impairment of the venous flow, extravasation of blood and serum, and swelling of the tissues with consequent pressure on the blood vessels and nerves in the affected area.

It can be understood that no one factor is responsible for the production of the typical deformity seen in a case of the Volkmann-Leser ischæmic contracture. It seems that the deformity in man is usually produced somewhat as follows. First, there is a fracture in the region of the elbow joint or of the humerus or bones of the forearm, an injury to the soft parts, or a fracture of a clavicle. Splints, casts, or bandages may or may not be applied. When splints are used pressure sores often develop, usually over the flexor muscles and scar tissue may form. But pressure sores are not required to bring about the deformity. The tissues are bruised by the trauma and extravasation of blood and serum follows. The tension may be so great as to cause cyanosis of the entire forearm. This intrinsic pressure causes local myositis and pressure on the nerves (usually the median and ulnar) and upon the blood vessels. Flaccid paralysis develops, followed by swelling in the muscles. Almost immediately, contraction of the flexor muscles begins and the main en griffe deformity originally described by Volkmann results.



As the process goes on owing to the diminished blood supply the flexor muscles begin to atrophy and the tendons become matted together. When the wrist is hyperflexed the fingers can be straightened. If the intrinsic pressure is relieved within a short time after the formation of the hematoma the deformity may be corrected.

Adie W J and Bankart A S B Spastic Paralysis  
*Brit Med J* 1926 11 1208 1211

ADIE limits his remarks to the condition resulting from diseases of the upper neurones of the pyramidal system in children.

Little's disease, the most common form of cerebral diplegia, is characterized by a preponderance of rigidity over paralysis. The essential anatomical lesion is a primary degeneration of cerebral neurones. According to many the most important etiological factor is injury to the brain at birth. Precipitate and protracted labors are associated with cerebral injury. In examinations of the brains of hundreds of children who died during the first seven months of life, Schwartz of Frankfurt found gross pathological changes due to birth injury in 65 per cent. Diplegia without gross macroscopical change in the appearance of the brain is extremely rare.

During the war, Adie noted that gunshot wounds of the vertex produced a transitory clinical picture of Little's disease.

Familial diplegia is progressive until death, where as the ordinary, non-familial type is not.

The non-familial type is helped very considerably by operative measures if there is no gross mental defect. Adie calls attention to the tendency to overestimate the severity of mental impairment in diplegic children. Athetoid and choreiform movements when at all marked are contra-indications to operative measures.

Adie discusses at length familial amaurotic idiocy which is characterized by progressive mental impairment, spastic paralysis and loss of vision, and a cherry red spot at the macula and ends in death before the second year of life. He discusses also various other more or less obscure conditions such as Merzbacher-Pelizaeus disease.

In speaking of decerebrate rigidity, he cites the work of Rademaker who proved that rigidity is absent so long as the red nucleus is intact. He dismisses the subject of the role played by the sympathetic in muscle tone with the statement that there is no evidence to substantiate this theory.

BANKART states that spastic paralysis is not a disease but a physiological state which closely resembles if it is not identical with decerebrate rigidity. The latter represents the removal of the inhibitory and controlling influence of the cerebral cortex from the parts of the central nervous system below. Under such circumstances, the latter enter into a state of abnormal reflex activity and the end result is exaggeration of the postural reflex paralysis of reciprocal innervation causing failure of the

muscles on one side of a joint to relax when those on the opposite side contract, and loss or impairment of the power of voluntary movement.

In Bankart's opinion the best method for the relief of spastic contracture yet devised is Stoeffel's operation. Foerster's posterior root section and the operation of Royle and Hunter, sympathetic ramusotomy, are inadequate.

FREDERICK A JOSTES M D

Kulenkampff D A Celluloid Protection for the Finger and a Contribution to the Treatment of Lacerated Extensor Tendons of the Fingers  
 (Der Cellulidfingerling zugleich ein Beitrag zur Behandlung des Abnisses der Fingerstrecksehne)  
*Muenchen med Wchnschr* 1926 1xviii 1485

The author describes a method of treating separation of the extensor tendons of the fingers from the points of attachment which he has used with good results on himself.

With the use of a finger from a Mikulicz glove and an 8 per cent skin colored solution of celluloid he makes a hard cap for the finger in the position of extension. He covers an uninjured finger with salve, inserts it in the glove finger, and then dips it several times in the celluloid solution. When on drying the glove finger becomes stiff it is withdrawn and given another coat of celluloid on the inside. To keep it from shrinking it is then dried on a Hegar dilator. It is best to choose a glove finger of large size.

The cast so made can be washed and sterilized and provides complete fixation of the terminal phalanges when the extensor tendons are torn off.

The author describes also the preparation of a protective cast to be used after the loss of a finger nail or when a fissure has formed in the end of a finger.

BODE (7)

Balensweig I Unusual Vertebral Injuries Report of Cases  
*Arch Surg* 1927 xiv 29

In cases diagnosed as back strain a fracture or fracture dislocation of the spine is often present. A clinical examination made before the development of an anxiety neurosis and supplemented by good roentgenograms should establish the diagnosis in most cases.

Fractures of the spine are usually the result of indirect force and most commonly involve a single vertebral body. They occur most frequently in the dorsolumbar segment extending from the eleventh dorsal to the third lumbar level. The first lumbar vertebra is the one most often involved. Fracture dislocations occur more frequently in the upper cervical and lower lumbar regions where the mobility is greatest.

At the site of the lesion there is pain which is aggravated by movement of the spine, a blow on the head or jumping on the heels. Pain is referred along the nerves from the level of the injury and there is weakness of the trunk or extremities.

Physical examination may reveal an awkward gait with the body tilted, a gibbus or flattening at the

site of the lesion, lateral deviation of the spine, occasionally with rotation, restriction of motion, local tenderness, and muscular rigidity. The reflexes are exaggerated or lost. Muscular paralysis and localizing sensory changes are usually present. Neurological findings are frequently absent or late in appearing.

Röntgenograms in two projections should be taken. The lateral view is most important in the diagnosis.

The author reports eighteen cases and illustrates them by fourteen plates. These emphasize the value of conservative treatment, particularly in young persons, and the excellent results obtained by grafting or fusing the spine in selected cases.

W. P. BLOUNT, M.D.

**Mathieu P. The Treatment of the Sequelæ of Coxalgia** (*Traitement des séquelles de la coxalgie*). *Rev d'orthop* 1926 XXXI 581.

Coxalgia may terminate in (1) complete ankylosis, which is favorable if the limb is straight, unmovable if it is in a vicious position; (2) incomplete ankylosis with extensive destruction of bone and conservation of limited mobility; (3) intracotyloid pseudarthrosis with very extensive mobility of the femur on the pelvis; (4) pathological luxations of the femur which may end in ankyloses, particularly in subluxations or extra cotyloid pseudarthrosis and instability of the hip in complete luxation; or (5) double coxalgia in which a combination of lesions in the two hips causes a serious infirmity.

In complete ankylosis in vicious position a high osteotomy of the femur gives excellent results. In incomplete ankylosis, osteotomy may cause recurrence in a vicious position unless a careful technique is used. This sequela can be avoided more surely by bringing about ankylosis of the hip by arthrodesis.

Ankylosis of the hip also remedies the complication of intracotyloid pseudarthrosis with great mobility of the joint. Among the most important symptoms of this complication is pain of mechanical origin. The author prefers extra articular to intra articular arthrodesis and thinks it may be substituted with advantage for the long continued wearing of an orthopedic appliance.

In extra cotyloid pseudarthrosis with great mobility of the hip the decision as to the treatment indicated is difficult. Fixation of the femur to the pelvis by an operation similar to arthrodesis is justified only by pain. In cases of flail hip which is not painful the surgical establishment of a good pelvic support for the femur seems to be the best solution of the problem.

In double coxalgia, ankylosis in a straight position on one side with mobility on the other is a combination more favorable functionally than a double straight ankylosis. However, there is a great deal of uncertainty in all of the operations proposed for attaining articular or para articular mobility in the coxalgic hip.

In the discussion of this report, RENDU reviewed the late results in six cases of intra articular arthrodesis for coxalgia. In one, he obtained an ankylosis which appeared to be bony, in three, complete ankylosis without bony union, and in two, an incomplete ankylosis with movement of about 5 degrees. He regards atypical operations as best. The object should be to coapt the largest intra articular and extra articular surfaces of healthy bone by the best method possible.

LANCE has practiced osteotomy for vicious position of the femur after coxalgia in sixteen cases. Five of the patients were children. In thirteen cases he performed a low subtrochanteric osteotomy, in one case, the Lorenz Y shaped osteotomy, and in two cases the Schanz osteotomy with support on the ischium. None of the patients showed complete ankylosis under general anæsthesia. Lance stated that if osteotomy were performed only for complete ankylosis it would hardly ever be performed. He has seen eleven of his patients since the operation, none of them has shown a recurrence of the deviation. He does not regard the persistence of limited mobility of the joint as a contra indication to osteotomy. He prefers the low osteotomy to the Y shaped osteotomy of Lorenz, a point of support on the pelvis is also good and there is less loss of length. He believes that the indications for extra articular arthrodesis are very limited.

NOVE JOSSEERAND stated that some of the serious forms of incomplete ankylosis are due to persistence of the inflammation rather than to poor static conditions of the joint. Formerly, resection was practised in these cases but arthrodesis is capable of curing some of them with less loss. There are three conditions under which artificial consolidation of the coxalgic hip is necessary: (1) coxalgia healed with incomplete ankylosis and recurrent vicious attitude; (2) coxalgia healed with insufficient support as a result of destruction of the head and the establishment of an intracotyloid pseudarthrosis or a pathological luxation; and (3) torpid coxalgia which does not heal in spite of long continued treatment. There are three methods of bringing about this consolidation: intra articular arthrodesis, para articular arthrodesis, and osteotomy with a support.

The results of grafting seem to be uncertain. In Nove Josserand's opinion Mathieu is a little severe in his judgment of intra articular arthrodesis when he maintains that it is dangerous and may reactivate the tuberculosis. Nove Josserand believes the first objection is not true and the second is true to some extent of all operations in tuberculosis. Intra articular arthrodesis has the great advantage of exposing the lesions to view and making it possible to curette a focus of fungosities, remove a sequestrum, or cleanse a residual abscess cavity.

That is why this operation seems to be indicated particularly in cases in which healing of the coxalgia is not certain.

Para articular arthrodesis by a trochanteric bolt is very interesting but has not yet stood the test of

time It is questionable whether the contact of surfaces so small as those of the trochanter and iliac bone will give a firm consolidation This operation seems to be indicated most definitely in intra-cotyloid pseudarthroses in which as a result of the disappearance of the head and a part of the neck the trochanter is almost in contact with the rim of the acetabulum and can be easily adapted to it Each of the three methods has its indications in different anatomical forms of the sequelæ of coxalgia

TREVES agreed with Mathieu that adduction is the deviation most difficult to avoid Flexion is almost as frequent Inward rotation is less constant and less harmful Therefore during the entire evolution of the lesion Treves immobilizes in extension abduction and slight inward rotation He does not regard ankylosis as the ideal form of healing Restoration to normal with preservation of at least a certain degree of mobility of the joint with a correct position of the limb is being accomplished more and more frequently by heliotherapy combined with plaster immobilization To obtain this result however ambulant apparatus must be worn for a long time With this treatment vicious positions are becoming more unusual When they occur the best treatment in the great majority of cases is a high linear subtrochanteric osteotomy Treves does not approve of cuneiform osteotomy with or without osteosynthesis these are useless and increase shortening He has abandoned oblique osteotomy also He believes that plaster immobilization for from forty five to fifty days after operation is sufficient He reserves ankylosing operations for cases with a protracted course and those in which high osteotomy followed by correction in abduction and slight inward rotation have failed

FAVERNIER stated that in his opinion Mathieu has too much distrust of intra articular operations He has noted that this attitude is general on the part of Paris surgeons Ankylosis is no more difficult to obtain by an intra articular operation than by an extra articular operation

ROCHER called attention to the fact that not every coxalgic hip that is ankylosed is defective functionally To prevent progressive adduction it is generally necessary for the patient to wear an apparatus for a long time Ankylosing operations by the extra articular method render the wearing an apparatus for a long time unnecessary Rocher regards Mathieu's method as one of the best

DUPAN thinks that the aim of treatment in coxalgia should not be ankylosis in all cases Healing with perfect restoration of function has been brought about by heliotherapy and immobilizing plaster extension during the painful period However it is very difficult to tell when a coxalgia is cured

SORREL agreed in general with the conclusions of Mathieu but he thinks that ankylosis is not the only desirable termination of coxalgia at least not in children Quite frequently some movement of

the hip persists after a benign coxalgia which has been properly treated This movement should be respected ankylosing operations are justifiable only in cases in which walking is difficult and these are rare

AUDREY G MORCAY M D

Lasserre C and Mouchet A A Pseudo Cystic Giant Cell Tumor of the Femur in a Child 32 Months of Age Curettage Followed by Filling of the Cavity with an Osteoperiosteal Graft from the Mother Consolidation Late Result (Tumeur pseudo kystique à myéloplaxes du fémur chez un enfant de trente-deux mois évidemment suivie de comblement par greffons ostéoprostiques homoplastiques d'origine maternelle consolidation résultat éloigné) *Full et mém Soc nat de chir* 1926 lvi 886

The child whose case is reported was first seen by Lasserre on November 8 1924 A month previously he had fallen and was unable to rise because of intense pain at the upper portion of the right thigh A physician applied a splint and advised a roentgen examination He interpreted the roentgenogram as showing fracture and osteitis of the femur and immobilized the limb in plaster

Lasserre removed the plaster The child did not feel any pain when his hip was mobilized The hip appeared normal and the fracture appeared to be consolidated but the movements of the hip joint were limited Roentgen examination showed a dappled clear area with its upper pole 2 cm below the joint cartilage and its lower pole 3 cm lower This was surrounded by a shell denser than the surrounding bone At its two thinnest points the bone cortex which constituted the shell was fractured Lasserre made a diagnosis of bone cyst with pathological fracture but was doubtful regarding it as a sister of the patient had tuberculosis of the calcaneum and he had recently had a case of tuberculous cyst of the neck of the femur which was verified by operation

Considering the age of the patient and the fact that bone cysts sometimes disappear under immobilization he immobilized the leg When the apparatus was removed on February 8 1925 the upper end of the femur in the region of the greater trochanter was found to be swollen There was an elongation of the right leg of 2 cm Movements of the hip joint were possible and not painful Consolidation seemed to have occurred

On February 20 the infant who was extremely active climbed on a chair and fell sustaining a subtrochanteric fracture of the right femur Roentgen examination the next day showed the picture of a cyst resembling that described before but larger At operation the defect was filled with an osteoperiosteal graft The graft was taken from the mother's tibia as it did not seem possible to obtain enough bone from the tibia of a child so young The histological picture was that of a giant cell tumor

Roentgen examination made on May 14 1926 showed consolidation with an elongation of the

limb of 2½ cm. The hip movements were normal. The spotted appearance of the diaphysis had given place to bone condensation.

Mouchet, who presented Lasserre's report to the Surgical Society, concluded from a study of the roentgenograms that the case was one of fibrous osteitis. There were only a few groups of giant cells at one point. Fibrous osteitis is rare at this age, as a rule it occurs after the sixth year particularly in the period of adolescence. The two diseases are closely related, and Mouchet regards it as probable that they are only two stages of the same condition. AUDREY G. MORGAN M.D.

**Bernstein M. A. and Arens R. A. Diagnostic Inflation of the Knee Joint. A Clinical Radiological Study. *Radiology*, 1936, vii, 500.**

The authors discuss derangements of the knee joint which under ordinary circumstances present negative findings in the roentgenogram. Soft tissue structures do not readily cast a shadow unless they have undergone considerable change or some medium is introduced to outline them. Liquids injected into a joint for diagnostic purposes are too irritating, often leading to the formation of adhesions, and are absorbed too slowly. Gaseous substances are better. Oxygen or carbon dioxide should be used. The authors employ carbon dioxide because it is very readily absorbed and produces very little irritation.

The anatomy of the knee joint is reviewed with special reference to the spaces which can be inflated. The normal appearance of these spaces when they are inflated is shown by roentgenograms. The authors technique for the inflation is described in detail. The parts rendered visible by this method are the synovial membrane, fat pads, and semilunar cartilages. The conditions concerning which information may be obtained are tears of the ligamentous structures of the joint, displacements and tears of the cartilages, and chronic synovitis.

The article includes roentgenograms of various lesions with legends describing the findings. The procedure has had no untoward results. The authors have found it a valuable aid in the differential diagnosis of knee joint derangements and frequently have obtained evidence from it which justified arthrotomy. ADOLPH HARTUNG M.D.

**SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC.**

**Lavalle R. and Ombredanne L. The Treatment of All Forms of Tuberculous Osteo Arthritis by Bone Grafts. (Traitement par les greffes osseuses de toutes les ostéo arthrites tuberculeuses.) *Bull. et mém. Soc. nat. de chir.* 1926, lvi, 955.**

In 1923 Lavalle reported a method of bone grafting for the treatment of tuberculosis of the knee. He has now extended the method to the treatment not only of tuberculosis of all bones and joints, but also of tuberculosis of the lungs. In

twenty one cases he has passed a bone graft through the lung immediately below a cavity. His method is based on the theory that there is a venous congestion at a tuberculous focus because the vessels are compressed, and while the arterioles can overcome the pressure sufficiently to bring blood in, the veins cannot overcome it sufficiently to carry the blood away. When a tuberculous epiphysis is sectioned a large quantity of black thick blood is discharged, this exercises pressure on the bone tissue. The pressure to which the bone is subjected and the poor oxygenation resulting from dilatation of the veins furthers the progress of the tuberculosis. The object of the described method is to restore circulatory rhythm and carry off the excess of fluid. Lavalle introduces two intra-osseous grafts, one above and one below the joint and connects them at the ends by a subcutaneous bone graft to be removed later. The grafts drain the dilated veins and relieve the pressure. They carry off blood through the capillaries which rapidly penetrate them.

In the treatment of Pott's disease a longitudinal subcutaneous graft is made running up and down the affected part of the spinal column. Grafts are run obliquely inward and downward from this, penetrating the body of one vertebra obliquely and passing through the intervertebral disk and into the body of the vertebra next below.

Twenty clinical cases are reported, the reports being illustrated with photographs of the patients and roentgenograms of the joints treated. Lavalle claims to cure all forms of tuberculous osteo arthritis whether with or without fistulae and regardless of the age of the patient, within one month, by using the proper technique for each joint.

Ombredanne, who presented this report to the Surgical Society, reported four cases of his own which were operated upon by Lavalle's method and several others which were operated upon by similar methods. He found that the operation quickly relieves the pain, brings about recalcification of the epiphysis and also of the metaphysis when the latter is traversed, and helps to restore joint function but he is inclined to think that Lavalle claims too much for it. While the patients treated by Lavalle recovered with free movement, Ombredanne's patients recovered with ankylosis and his results were not obtained so quickly as those reported by Lavalle. Ombredanne suggests the possibility of exciting an acute attack of tuberculosis by a central graft and of the interference of such a graft with the later growth of the bone in children. However, he thinks the method a very important one and recommends further tests of it. AUDREY G. MORGAN M.D.

**Jonhanson S. On the Treatment of the Ischæmic Contraction of Muscles. *Acta chirurg. Scand.* 1926, lvi, 188.**

The author reports three advanced cases of ischæmic muscular contractions which were cured by operative liberation of all of the flexor muscles and plastic elongation of all of the flexor tendons.

This excellent article on a very important subject should be widely read. Johansson discusses various methods of treatment none of which has given such uniformly good results as the one herein described.

**Pieri G. Plastic Reconstruction of the Thumb**  
(Contributo alla ricostruzione del pollice) *Chir d'organi di movimento* 1926 xi 89

Pieri reports three cases of traumatic lesions of the thumb and one of congenital malformation of the hand. In the first three he made a curvilinear incision beginning at the tubercle of the scaphoid and passing around the thenar eminence. Another incision was begun at the angle between the base of the thumb and the adjacent metacarpal and directed toward the apex of the second metacarpal running around it in a racket shape to remove the exuberant skin. A third incision was made on the back of the hand running parallel with the first metacarpal and at a little distance from it and continuing distally with the first incision. These three incisions converged toward the base of the thumb at the angle of the first interdigital space.

The first metacarpal was then disarticulated and the adductor pollicis resected. This did no harm as the prehensile function of the thumb depends almost wholly upon the opponens and the flexors. The skin flap from the thenar eminence was wrapped around the first metacarpal which was used as the basal phalanx of the new thumb and the skin flap from the dorsal surface of the first interdigital space was brought around to the thumb and used to cover the third metacarpal. The anatomical and functional results of the operations were excellent. The new thumb had a good prehensile power even in the case in which all of the fingers had been lost small objects could be held.

In the case of congenital malformation all of the fingers and the thumb were fused together. At operation the thumb bone was separated from the others by a longitudinal incision through the soft parts and pulled away from the other fingers. The two proximal phalanges of the second finger and the distal half of the second metacarpal were removed. A skin flap was cut on the back of the hand between the first and second fingers dissected free from the underlying tissues brought around to cover the interdigital space between the thumb and the rest of the hand and fixed with interrupted silk sutures. The margins of the gap left by the removal of the skin flap were sutured together. This was easy on account of the removal of the bones of the second finger. The thumb has good opposition and prehension.

AUDREY G. MORGAN M.D.

**Dega. Plastic Operation on the Thumb by Wierzejski's Method and Its Late Results** (La plastique du pouce d'après la méthode de Wierzejski et ses résultats éloignés) *Rev d'orthop* 1926 xxxiii 497

Wierzejski has been performing his plastic operation on the thumb since 1916. A new thumb

is formed from the first metacarpal of the same hand. Four illustrative cases are reported briefly. The results are permanent and the patient has excellent use of his hand.

One of the cases reported was that of an organist and violinist. Since the operation this patient has been able to carry on his work. No trophoneurotic ulcers develop as they frequently do after the transplantation of toes or free grafts. The technique is simple and the method is less mutilating than others as neither the toe, finger, or graft is sacrificed and there is less risk of failure than in transplantation.

AUDREY G. MORGAN M.D.

## FRACTURES AND DISLOCATIONS

**Leriche R. The Treatment of Compound Fractures** (Du traitement des fractures compliquées) *Bull et mém Soc nat de chir* 1916 lii 2103

In the opinion of the author primary suture at the level of a compound fracture should not be done. Statistics cited against this view are misleading since usually the type of fracture is not stated and many fractures classed as compound are not compound. Moreover the statistics do not give the number of amputations performed for fracture during the same period and this must be taken into consideration. If the wound is left open osteosynthesis need not be rejected as too dangerous and may be indicated when for instance the fracture is irreducible or cannot be maintained in reduction or when there is an interposed fragment or the fracture is *juxta articular*. However this is not the method of choice as it may lead to delayed union, pseudarthrosis, exuberant callus or fistulae.

The best treatment is a three stage procedure: (1) cleansing, (2) cutaneous suture and (3) osteosynthesis or grafting. This method also has several disadvantages. In the leg retraction of the skin may render suture impossible after several days. Autoplasty may be done or a dermo epidermic graft applied to save time or the wound may be allowed to heal by secondary cicatrization. This may prevent osteosynthesis but the latter often proves to be unnecessary.

Between 1919 and 1923 the author treated twenty one compound fractures in three of which primary osteosynthesis was done because of irreducibility. In only four was secondary osteosynthesis necessary. There were no deaths. The results in cases treated routinely by primary osteosynthesis are far less satisfactory.

LEO M. ZIMMERMAN M.D.

**Rieger. The Degree of Working Capacity After Fractures** (Ueber den Grad der wiedererlangten Arbeitsfähigkeit nach Frakturen) *Arch f orthop u Unfall Chir* 1916 xxvii 209

The author reviewed 1,400 accident cases to determine the capacity for work after fractures. The cases were studied with regard to the patient's age, the duration of incapacity and the nature of the

injury. In general, the results are considered "not especially good." Return to normal was seldom prompt enough to prevent the necessity for financial aid. The quickest restoration occurred in cases of fractures of the radius and ulna. The majority of the patients recovered their previous working capacity, but this usually required some time during which financial aid was required. All tended to exaggerate their injury. Most of them were agricultural workers.

HACKENBROCH (Z)

### ORTHOPEDICS IN GENERAL

Lowman C. L. The Underwater Gymnasium as an Adjunct to Orthopedic Surgery. *J Bone & Joint Surg* 1921 11 119

The underwater gymnasium is employed by Lowman in the treatment of various types of orthopedic conditions such as old and recent poliomyelitis, cerebral palsy, congenital hip conditions, postural defects, etc. A pool 3 ft deep containing

2½ ft of water is divided into two sections, one for salt water and the other for fresh water, the temperature of which ranges between 88 and 91 degrees F. The children are placed on various types of apparatus such as submerged plinths, English surf boats, etc. and instructed in active and passive exercises. They are supported in the water also by the physiotherapy workers and given exercises for muscle re-education.

In ten cases of recent poliomyelitis this method was followed by more rapid and satisfactory improvement than any method used previously. It should be used, not as a substitute for muscle training in the gymnasium or in bed, but as an adjunct to the latter. In old poliomyelitis the pool treatment tends to tone up the body and assists in gymnasium work. The psychological effect is very marked as the patients feel they are participating in active sport. The treatment of congenital and other hip conditions is greatly facilitated by the pool method.

RUDOLPH S. REICH, M.D.

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

Winslow N. Extracranial Aneurism of the Internal Carotid Artery. History and Analysis of the Cases Registered up to August 1 1925. *Arch Surg* 19 6 viii 689

Winslow reviews 106 cases of extracranial aneurism of the internal carotid artery—forty two spontaneous eighteen erosive twenty six traumatic nineteen arteriovenous and one unclassified. The condition has sometimes been mistaken for peritonsillar abscess and lancing has been done with a consequent fatal hæmorrhage. Prompt diagnosis and correct surgical treatment will save life in most cases but in the past many patients have died under dilatory or incorrect treatment.

Of the 106 cases reviewed seventy were operated upon thirty five were treated conservatively and one was found at autopsy. In the seventy cases treated surgically a cure resulted in 65.71 per cent improvement in 2.86 per cent no improvement in 1.43 per cent and death in 30 per cent. In the thirty five treated conservatively a cure resulted in 8.5 per cent no improvement in 17.14 per cent and death in 71.43 per cent in 2.86 per cent the outcome is uncertain.

Operation is the surest and quickest method of relieving the condition permanently.

As a rule the symptoms are frank. On inspection of the throat there is seen a bulging in the lateral pharyngeal wall. The swelling may be circumscribed or diffuse. To the touch it is soft and elastic and pulsates throughout its entire extent. Externally there may be no evidence of the condition or there may be boggy and a distinct lump behind the angle of the jaw. With the stethoscope placed over the swelling a bruit may be heard. Both murmur and pulsation cease when the common carotid artery is compressed against the vertebral column. The symptoms include dysphagia dyspnoea hoarseness deviation of the tongue toward the affected side a roaring in the ears mild cerebral symptoms and hemiparesis. Diagnostic puncture is warranted only if prompt carotid ligation can be done in case of rupture through the path of the needle.

The treatment of choice is ligation of the internal carotid artery proximal to the aneurism or ligation of both the common and external arteries and any branches of the latter arising between the site of the ligation and the bifurcation. Aneurismorrhaphy may be resorted to in a few cases in which the sac is accessible.

Syphilis is not important in the etiology of the condition only two cases cured with specific therapy have been reported.

Because of the good results obtained by ligation medical or conservative treatment is not justifiable. Before the circulation in the internal carotid artery is permanently arrested the common carotid artery should be temporarily occluded under local anaesthesia. Usually a defective cerebral circulation will be promptly manifested by vertigo or faintness. When this occurs the ligature should be removed without delay.

Of the forty two spontaneous aneurisms in the cases reviewed thirty occurred in women. Aneurism elsewhere is far more common in the males than in females. In a case of carotid aneurism treated by Langenbuch in 1892 an attempt was made to narrow the lumen of the vessel with a silk ligature so as to lessen but not interrupt the flow of blood. Following this procedure the pain and pulsation were less marked.

Of the eighteen aneurisms of the erosive type in the cases reviewed twelve occurred in males. In this group there were several catastrophes in the treatment. The prompt recognition of faucial aneurism consecutive to scarlet fever influenza cervical adenitis septic sore throat and inflammatory tonsillar disease is of the utmost importance.

Of the twenty seven traumatic aneurisms in the cases reviewed twenty five occurred in males.

Of the nineteen arteriovenous aneurisms eighteen occurred in males and eighteen were of traumatic origin. The treatment of this type includes carotid and jugular ligation and if possible, extirpation of the sac.

In conclusion the author calls attention to the fact that aneurism of the internal carotid artery in its cervical portion is not so rare as was once thought and is not a benign lesion. Operation results in a fair percentage of cures whereas conservative or internal treatment is almost invariably followed by death. While a spontaneous cure is possible it is very rare. If disasters are to be avoided any unilateral lump in the throat should be regarded as a possible aneurism until it is proved to be some other condition.

The article includes the clinical observations made in all of the cases and a detailed report of the more important cases. It is supplemented by a very full bibliography. JAMES B. BROWN, M.D.

## BLOOD, TRANSFUSION

Nather A. Pernicious Anæmia and Blood Transfusion. *Klinische Anaemie und Bluttransfusion*. *Arch f klin Chir* 1926 cxi 14

The author reports upon the experiences of the von Eiselsberg Clinic with transfusion of blood in twenty nine cases of pernicious anæmia.

To determine the compatibility of the blood of the donor and recipient, the Landsteiner Moss test was used. For the transfusion, in addition to the Oehlecker apparatus, the method of Percy was used as a rule as it requires less preparation than other methods and makes it possible to keep the donor and recipient in different rooms. Although some surgeons warn against them transfusions given at very short intervals were proved to be harmless. Since in one case another transfusion given after an interval of several months was followed by a severe anaphylactic reaction, it is recommended that in such cases the patient be rendered immune to anaphylaxis before the transfusion is repeated. An attempt was made to accomplish this by an intra-venous injection of about 4 c cm. of the donor's blood on the day before the transfusion was given. The amount of blood transfused each time was between 300 and 600 c cm., and the greatest number of transfusions was nine.

All of the patients had been sick for a long time and had been treated medically. Of six patients who were almost moribund when the transfusions were given, four died after a few days. Of the two who survived, one, who now has had a remission of eleven months, shows that in no stage of pernicious anemia is the omission of blood transfusion justifiable. In the case of the others who came to transfusion in the most varying stages of the disease, transfusions were done in series (a series of from three to six transfusions at intervals ranging from one to three weeks). Remissions of most varying duration (from one to nineteen months) resulted. About half of the patients are still alive.

An observation of interest was the fact that a series of patients who were strikingly benefited by the first series of transfusions did not show a favorable result when the transfusion was repeated for recurrence of the condition. The fact that of twenty nine patients some of whom were very sick, twenty showed an immediate favorable result after

transfusion, demonstrates that blood transfusion is of value for the prolongation of life and the rapid production of a remission. VOLLMER (Z)

#### Carlton C H. Blood Transfusion in Children's Practice. *Lancet* 1926 cxi 850

This article is based on some 600 transfusions done in 1925 in the Hospital for Sick Children, Toronto. The methods are described in detail. Reactions are rare and can be remedied by proper treatment. The summary is as follows:

- 1 The transfusion of whole blood by means of glass syringes is an easy and successful operation which may be performed even on the newly born.
  - 2 As a combatant of shock and a corrector of hemorrhage it is a valuable routine adjunct to many operations performed on children.
  - 3 It guards the newly born child against the dangers of prematurity and hemorrhage.
  - 4 It may save the life of a child suffering from burns.
  - 5 It is an aid to the treatment of metabolic toxemias of infancy.
- MARCUS H. HOBART, M.D.

#### LYMPH VESSELS AND GLANDS

##### Reichert F L. The Regeneration of the Lymphatics. *Arch Surg* 1916 xiii 871

By replantation of a dog's limb it was comparatively easy to follow the regeneration of both superficial and deep sets of lymphatics.

Regeneration takes place as early as four days after operation. From a practical standpoint this fact raises the question as to the possibility of regeneration of lymphatic channels between the first and second stages of the operation for carcinoma as performed by many surgeons. The findings indicate that the primary growth in malignant conditions should be removed before or at the same time that the regional glandular dissection is done.

WILLIAM C. SHACKLETON, M.D.



# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE POSTOPERATIVE TREATMENT

Wilson W R Detoxication in the Treatment of Burns *Brit M J* 19 7 1 54

Burns owe most of their deadliness to toxæmia. Therefore detoxication is indicated in their treatment. The first indication is to induce free exudation and the second to get the exudate away from the damaged surface. In four of five cases which he reports the author used a hypertonic sodium chloride solution and glycerin.

J FRANK DOUGHTY M D

Blair A P Repair of Defects Caused by Surgery and Radium in Cancers of the Hand Mouth and Cheek *Am J Roentgenol* 1927 xvii 99

Following a loss of tissue from a heat burn surgical excision or mechanical injury a more or less acceptable repair can be made by first removing the scar or with proper precautions the granulations down to normal tissue and then filling the defect with the most appropriate available tissue. In planning the repair the surgeon must consider the appearance and function not only of the area to be repaired but also of the area from which the repair material will be taken. As nearly as possible, lost epithelium derma subcutaneous fat tendons and resisting fascia should be replaced with like tissues. Transplants of cartilage bone and possibly motor nerves may sometimes be indicated. Non hair bearing skin is a good substitute for the oral and pharyngeal mucosa.

The same rules apply to the restoration of areas destroyed or damaged by exposure to the roentgen rays or radium but in practice an added difficulty may arise in these radiation burns and certain chemical burns. In the debridement of these lesions after the elapse of several months there may be difficulty in determining whether unnecessary sacrifices are being made or tissue of doubtful vitality is being left. Old irradiation burns that have been scarred over for several years are not especially bothersome in this respect. In attempts to clean up indolent raw or painful burnt areas that persist in spite of all forms of treatment and neither heal nor make a frank slough great difficulty may be encountered. In such cases it is better when practicable to remove too much tissue rather than too little. If immediate repair is done it should be done with tissue of a vitality that can easily compensate for a possible lack of healing energy in the tissue upon which it is to be engrafted. A delay of from six to eight weeks before making the transfer of tissues from an irradiated area for an irradiation burn is better practice than the two or three weeks

that is ordinarily allowed for other repairs. There may be some question as to the best manner of dealing with exposed necrotic bone that is still attached. As a rule it is not good practice to attempt to excise a dead part of a bone before it separates naturally. On the other hand bone killed by irradiation separates very slowly. The application of a soldering iron to kill the indolent area and multiple drilling may hurry the exfoliation.

Carcinomatous changes in the irradiated tissues may further complicate the problem. As a rule the simple superficial epitheliomata will not require excision deeper than the subcutaneous fascia and the defect can be repaired immediately. It is usually best to include in the excision the entire area of damaged skin and immediately replace it with a pocket flap or a free skin graft rather than as has been the common custom to make a number of small local excisions and apply a Thiersch graft. The neglected epitheliomata and the carcinomata will demand the same excisions or amputations with corresponding glandular excisions as similar cancers arising from any other cause.

ADOLPH HARTUNG M D

## ANÆSTHESIA

Mennell Z A Question on the Teaching of Ether Anæsthesia with a Report of Four Deaths under Ether *Proc Roy Soc Med Lond* 19 7 xv 185

Complete abdominal relaxation cannot be obtained until the adductors of the vocal cords have been paralyzed. It occurs with the earlier stages of dilation of the pupil. Overstimulation for long periods results in fatigue a fall in the blood pressure and shock.

There is a tendency toward a return to the use of chloroform as a routine anæsthetic. It is not true that the only difference between chloroform and ether is that the former causes death on the table and the latter causes it subsequently. Ether is not the only anæsthetic which causes postoperative deaths. Deaths from ether sometimes occur on the table though not with the same suddenness as those caused by other anæsthetics.

Four deaths following ether anæsthesia are reported. Microscopic examination of tissue from three of the patients showed dilatation of all minute vessels which means death due to bleeding in the tissues. This may be produced in animals by injecting with histamine. Specimens from the fourth case showed that death was due to fat embolism or infarction.

This condition usually occurs in bed ridden patients  
MURF P HOON M D

Duncan, J W Personal Experience with Ethylene Gas in Surgical Anæsthesia *Nebraska State M J*, 1926, vi 449

The author made a study of ethylene anæsthesia in 164 cases. He found that ethylene gas induced anæsthesia more easily and quickly than nitrous oxide and that, upon recovering consciousness from ethylene anæsthesia, the patient did not have that feeling of impending catastrophe which so often follows the use of nitrous oxide. The average induction time was a little less than three minutes. After three breaths, no disagreeable odor was recalled by the patient.

The relaxation was not as complete as that obtained with ether, but was much more complete than that obtained with nitrous oxide. Aside from operations in the abdomen, all surgical procedures

can be carried out under ethylene anæsthesia without the addition of ether. The patient's color practically always remains pink, and after the induction of anæsthesia the pulse is slowed. Pulmonary lesions do not contra indicate the use of ethylene.

The author believes that the objection urged against ethylene anæsthesia that it promotes bleeding is not justified. Postoperative gas pains he attributes to the operative procedure rather than to the anæsthetic used. The margin of safety of ethylene is fully as great as that of ether and much greater than that of nitrous oxide.

In conclusion Duncan warns against the use of an open flame or a cautery in the presence of ethylene. Precautions against static spark should be taken by grounding the apparatus.

ANTHONY I SAVA, M D

# PHYSICOCHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Ylsholm E A Roentgenoscopic Apparatus for Cross Section and Localization (Roentgenoskopischer Modellierungsapparat Auch Fue Quer sektion und Lokalisation) *Acta radiol* 1926 vii 189

The author describes an apparatus by means of which during fluoroscopy it is possible to cut from a bulk of plastic material models representing the organs of the body. These models are true in shape as well as in size. The construction of the apparatus allows the patient sitting in a chair to be turned around simultaneously with and through an equal number of degrees as the plastic material. By screen examination from a distance of 2 meters or orthodiagraphically it is possible to record with a lead pencil as an indicator the different outlines appearing on the screen. The indicator is fixed to two arms which are movable at right angles to the rays and its elongation is formed of a curved metallic wire. The string cuts sections out of the plastic material corresponding to the outlines on the screen. The model is complete when the patient has made an entire rotation.

By the help of a vertically movable indicator fixed to the modeling table the apparatus can be used also to obtain cross sections of different parts of the body such as the heart. It further lends itself to the localization of lung abscess or foreign bodies.

Sievert R M A Circulating Physical Department for Standardizing the Roentgen Radiation Used in Therapy *Acta radiol* 1926 v 457

In the Physical Laboratory of Radiumhemmet Stockholm there is a Physical Measurement Department the members of which visit the roentgen wards throughout the country to investigate the roentgen apparatus and standardize the dosage. This department has been functioning for six months and seems to meet a long felt need. The investigation deals with the following factors:

- 1 The control accuracy and economy of the apparatus (a) the consumption of current (b) variations of primary voltage and their influence on the total irradiation (c) the degree of fine regulation for voltage and milliamperage (d) the reliability of the milliamperage meter (e) the reliability of the kilovolt meter (f) the filter (g) the presence of intensity of high frequency and (h) the durability and suitability of roentgen tubes

- 2 The factors which define irradiation and which should always be the same as far as possible. For every filter and voltage used these are (a) the peak voltage (b) the voltage curve or roentgen spectrum

and deep dosage (c) the milliamperage and (d) the ionization power of the irradiation

In order to facilitate the compilation of statistics the author proposes that the standardization be extended not only to the dosage but also to several other factors

Wintz H Experiences with Deep Roentgen Therapy in Urology *Urol & Cutan Res* 1927 xxx 9

Treatment of the prostate gland and the bladder with the roentgen ray is difficult because of the mechanical factors involved. A large part of this article deals with the technique employed by the author to overcome those mechanical difficulties. Seventy or 80 per cent of the unit skin dose is used in benign hypertrophy (adenoma) of the prostate while 110 per cent is necessary in carcinoma of the prostate gland or bladder. The application of the dose of 110 per cent requires a very exact concentration of the cones of rays from the different portals of entry.

The presence of inflammation increases the radio-sensitiveness. In pathological conditions in the prostate any inflammation of the rectum or bladder must be treated first. After their radiation care must be taken that no hard feces irritate the mucous membrane of the intestine and an abundant fluid intake must be provided to prevent irritation from a concentrated urine.

One of the complications subsequent to the treatment is tenesmus. This appears from three to twelve days after the irradiation. The attack may be made tolerable with belladonna.

Since two irradiations of from 100 to 110 per cent of the skin unit dose is generally necessary in carcinoma of the bladder an induration oedema is a frequent complication. The loose tissue of the space of Retzius is especially predisposed to this reaction. This induration is fairly harmless of itself but when the disintegrating tumor of the bladder becomes the site of infection the danger of a widespread cellulitis of the pelvis is very great. Therefore an ulcer from a burn in the bladder which occurs in inexact dosage of the carcinomatous portion may be a very dangerous complication.

In many cases of carcinoma of the bladder Wintz combines coppering with roentgen treatment. The principle consists in distributing particles of copper and copper salts in the tumor and the surrounding tissues by means of electrolysis and cataphoresis from a 3 per cent copper selenium solution in the bladder. The saturation of the tissues with copper increases the diffusion of the radiation and increases the strength of the dose about 15 per cent of the skin unit dose.

No results are given for cases of carcinoma, but sixty eight of eighty seven patients with prostatic adenomata were completely free from symptoms one year after the treatment

CHARLES H HEACOCK M D

Halberstaedter, L, and Simons A An Experimental Contribution on the Postoperative Irradiation of Malignant Tumors as Regards Wound Healing and the Prevention of Local Recurrence (Experimenteller Beitrag zur post operativen Strahlenbehandlung boesartiger Geschwuelste hinsichtlich Wundheilung und Verhuetung oertlicher Rezidive) *Acta radiol* 1926 v 501

In several cases in which large open ulcers were left by the removal of carcinomatous masses by diathermy, one half of each ulcer was irradiated while the other half was protected by lead

Although healing in the irradiated area was somewhat delayed, the resulting scar in this area was usually better than that in the part not irradiated

In one case, after the lapse of a month foci of recurrence appeared in the part not irradiated, whereas the irradiated part remained entirely free from them

Colwell H A and Thomson, M S On Some Effects of Primary and Secondary Roentgen Rays upon the Skin of the Frog Tadpole *Am J Roentgenol* 1927, xvii, 1

Exposure of tadpoles in ordinary water to primary roentgen rays for one and one half hours caused temporary hyperplastic changes in the epithelium with a certain amount of syncytium formation The maximum hyperplastic changes were noted from twenty four to eighty four hours after irradiation Later, atrophy occurred Prolonging the time of exposure shortened the period of hyperplasia and caused the degenerative changes to appear more early and to become more pronounced

The effects of secondary roentgen rays were studied by radiating the tadpole after the colloidal preparation of the heavy metals had been added to the water The metals used were

Elements	Atomic Number	Atomic Weight
Copper	29	63.5
Selenium	34	79.2
Silver	47	108.0
Gold	79	197.2
Lead	82	207.0
Bismuth	83	209.0

Ten, 5, and 1 per cent mixtures of a 1:2000 colloidal preparation of the six elements were used Gold in the 10 per cent solution proved too toxic

The most striking feature in these experiments was the high degree of hyperplastic change following the irradiation in the presence of colloidal silver and the length of time the condition persisted The least hyperplasia was seen with the use of copper Selenium holds an intermediate position between copper and silver With lead and bismuth, slight hyperplasia occurred, but degenerative changes were most

prominent In view of the very marked effects produced by silver, and to a less extent by gold, it seems probable that some particular range of wave length is responsible for the marked hypertrophic changes

CHARLES H HEACOCK, M D

## RADIUM

Failla, G The Development of Filtered Radon Implants *Am J Roentgenol* 1916 xvi 507

Failla reviews the development of filtered radon implants from the bulky radium applicators inserted into tumor masses by Abbe and others in 1906 and capillary glass tubes containing radon which were used in hollow metallic needles by Stevenson, to the 5", 10" and 12.5 mgm radium needles and the suggestion of Duane that 'bare seeds' be inserted and left permanently in the tissues

Because of the zone of complete necrosis developing about glass implants with a resulting slough and painful reaction, filtration of the radon implants was attempted The success of Regaud with prolonged applications of filtered small content needles encouraged the search for filtered implants Halberstadter's method of employing thorium X is described

It soon became evident that the radon must be collected directly into the metal Gold was the metal eventually selected The technique is described After extensive physical and biological tests it was found that gold implants with a wall 0.2 mm thick gave most promise of success Extensive data obtained from ionization chamber readings, fresh butter decoloration tests, rabbit muscle necrosis experiments made by Cutler, and the practical clinical use of bare seeds are recorded in tables, curves are plotted and extensive comparisons are made

By comparing the clinical results obtained with glass 'seeds' with the experimental data obtained with the use of gold implants it was finally determined that 3.3 mc gold implants with walls 0.2 mm thick would be equivalent to 1.0 mc glass 'seeds'

The author draws the following conclusions

1 Gold implants with a wall thickness of 0.2 mm remove 99 per cent of the beta rays and are suitable for intratumoral irradiation

2 Since 1 cm bare 'seeds' have been in common clinical use, 1 mc gold implants with a wall thickness of 0.2 or 0.3 mm should be substituted for the 1.0 mc glass 'seeds' in the transition from glass to gold

3 The gold implants produce but 59 per cent of the necrosis caused by the glass implants More over, the necrosis caused by gold implants is partial, while that produced by the glass filter is complete This difference in the type of necrosis probably accounts for the absence of slough and the fact that the pain is much less severe in the use of gold implants

A JAMES LARKIN, M D

Allen E V Bowing H H and Rowntree L G  
The Use of Radium in Internal Medicine  
Further Experiences *J Am M Ass* 1927  
lxxxviii 164

Although the internal administration of radium has fallen into disuse the authors have been investigating its value in the treatment of certain diseases and for the relief of pain. In a dosage up to 50 micrograms there were no toxic manifestations.

Radium chloride was given thirty seven times to twenty two patients suffering from hypertension which in five was graded as malignant and in seventeen as benign. The dosage varied from 10 to 50 micrograms. Care was taken to establish the resting level of the blood pressure by having the patient remain in bed without medicine for three days. The results were compared with those following the use of luminal sodium nitrite and 'hypertensive' baths. The luminal and nitrite were given in six doses of  $\frac{1}{2}$  gr each. The hypertensive bath consisted of immersion for from five to fifteen minutes in water at a temperature of 105 degrees F.

The most striking result evident in the tables of blood pressure was the response to rest. The effect of radium chloride on the blood pressure was neither more marked nor more lasting than that of luminal or nitrite. In only two cases were the results more than temporary.

The drug was administered for the relief of pain thirty nine times in twenty eight cases of various types in doses varying from 10 to 50 micrograms. The most striking effect was produced on the severe and usually intractable pain of thrombo angitis obliterans. In seven of the twelve cases there was marked or complete relief from single injections of radium chloride. In the five others there was little or no response. The effect on diabetic neuritis was less marked but nevertheless gratifying. In a group of cases of endarteritis obliterans neuritis arthritis and pruritus vulvæ the relief was not sufficient to warrant further use of the method. The authors do not recommend its use in cases of thrombo angitis obliterans because non specific vaccines yield even greater relief.

## MISCELLANEOUS

### CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Rabinowitch I M Diabetic Gangrene *Canadian M Ass J* 1927, xvii 27

Rabinowitch gives a statistical study of 1,016 cases observed in the diabetes clinic of the Montreal General Hospital. Gangrene was found in thirty-six (3.5 per cent). Though this may appear to be a small percentage, gangrene has become one of the chief contributory causes of death in diabetes. The death rate from diabetes has decreased in hospital-treated cases, but the incidence of gangrene has not decreased and has accounted for a very large percentage of the total mortality. This is due to the fact that other conditions formerly contributing to the death rate, such as surgical complications, coma, etc., are now fairly well controlled with insulin.

The incidence of gangrene increases with age. In the experience of the Montreal General Hospital, about 25 per cent of diabetics past the age of 70 years develop gangrene. In Joslin's experience one in every five persons developing diabetes after the age of 70 years also develops gangrene. The readiness with which gangrene develops appears to be related more closely to the period of life at which the diabetes develops than to the duration of the disease itself. It was noted that when the disease developed between the ages of 30 and 40 years the average time before gangrene occurred was nine and three tenths years, whereas when the disease developed after the age of 70 years, the average time before gangrene occurred was less than one year.

The association of syphilis and diabetic gangrene is discussed. A statistical study showed that the incidence of syphilis was five times as great in diabetics with gangrene as in those with no gangrene. The discovery of a luetic infection may be of value not only in the prophylaxis and treatment of gangrene, but also in the correct interpretation of the slow healing of wounds following amputations.

Blood cholesterol studies showed that though the cholesterol content of the blood is increased in diabetes, the average percentages found in diabetes with gangrene are of a still greater magnitude. Dietary indiscretions result in a high cholesterol content.

As is well known, diabetics are very liable to sciatica. Pain extending to the toes, coming on suddenly, and at times causing limping should arouse suspicion. Cases with this symptom should not be dismissed with the diagnosis of 'sciatica' or 'diabetic neuritis' and the suggestion to the patient that if the diet is followed the pain will probably cease. A special inquiry should be made as to whether attacks of pallor or bluish red dis-

coloration occur in the limb. Such attacks suggest gangrene, especially if the foot is at times pale and cold and at other times congested. The diagnosis of early gangrene is reasonable if the pulse in the posterior tibial artery is obliterated, and is almost certain in the absence of pulsation in the popliteal artery.

In the treatment of early gangrene, rest with dietary and insulin treatment, Buerger's exercise, hot and cold baths alternately, radiotherapy, and decortication of blood vessels have all been tried with strikingly good results but also with failures. Cases of gangrene beyond the stage of recovery may generally be divided into those which unquestionably demand immediate operation and those in which delay may be possible. For the typically foul and infected case with septicemia, immediate removal of the limb appears to be the only course open. It is the other type of case that presents the greater problem. Though amputation of the limb is the eventual form of treatment, this may be postponed if other conditions which tend to increase the surgical risk are also present. Proper dietary measures and insulin treatment before operation may do much to improve the postoperative course. A most important consideration, however, is the influence of the gangrene on the progress of the diabetes. If, in spite of the local condition, the urine can be kept sugar free and the blood sugar normal, the operation may be safely postponed until the surgeon believes that the risk is minimal. However, if the diabetes cannot be controlled, immediate operation is the best course.

JACOB S GROVE M D

Schreiner B F A Summary of the Methods and Results of the Treatment of Cancer, Based on a Study of 3,246 Cases Admitted Between May 1914 and May, 1925 *Acta radiol* 1926 vii 419

This report is based upon 3,246 cases of malignancy treated at the State Institute for the Study of Malignant Disease, Buffalo, New York, in the period from May 1914, to May, 1925. The cases are grouped according to the type of lesion as follows:

Condition	No of Cases
Fpithelioma (basal cell)	425
Epithelioma of lip	16
Epithelioma of penis	37
Epithelioma of vulva and clitoris	31
Fpithelioma of oral cavity	375
Lpithelioma of antrum of Highmore	46
Adamantinoma	8
Epithelioma of larynx	65
Lpithelioma of œsophagus	54

Cond t	No of Cases
Epithelioma branchiogenic	15
Epithelioma of vagina	33
Epithelioma of cervix	519
Adenocarcinoma of cervical canal	16
Adenocarcinoma fundus of uterus	56
Ovarian tumors	32
Cancer of rectum and anal ring	184
Epithelioma of bladder	65
Carcinoma of prostate	75
Carcinoma of thyroid	14
Carcinoma of stomach	60
Carcinoma of breast	531
Kidney tumors	17
Mixed tumors and endotheliomata	41
Testicular sarcoma	2
Hodgkin's disease	46
Leukæmia	25
Round cell sarcoma	76
Sarcoma (spindle cell etc.)	17
Melanotic sarcoma	35

The cases were carefully classified clinically into two groups—those in which the disease was still local and those in which there were regional or disseminated metastases

Tumors of the skin and protective membranes were divided into three groups namely basal cell epitheliomata, pearl forming or prickle cell epitheliomata, and epitheliomata originating from the mucous membranes

Basal cell epithelioma of the skin was treated entirely by irradiation. Primary healing resulted in 95 per cent of the cases and healing which lasted for from one to six years in about 75 per cent

In the cases of epithelioma of the lip a clinical cure lasting for more than three years was obtained in 78 per cent of the cases of Group 1 in which the tumor was confined to the lip and in 39 per cent of those of Group 2 in which there were regional metastases but the lesion was still movable. In the cases of Group 3, those of far advanced tumors of the lip with involvement of the lymph nodes and periosteum, no clinical cures were obtained

Of thirteen early cases of epithelioma of the penis without demonstrable metastases a clinical cure lasting from two to ten years was obtained in seven. Of twenty four cases with small metastases in the inguinal nodes a clinical cure lasting for from one to seven years was obtained in four

In cases of epithelioma of the vulva and clitoris treated by coagulation and the implantation of radium a clinical cure lasting up to two and a half years was obtained in four

Of 375 cases of cancer of the oral cavity which were treated by the implantation of radium emanation and the use of high voltage X rays a clinical cure lasting up to eight years was obtained in from 6 to 50 per cent depending upon the situation of the primary lesion and the absence of demonstrable metastases in the lymph nodes. Of 235 cases in which the lymph nodes were involved a cure lasting up to four years was obtained in ten

Of twenty three early cases of epithelioma of the antrum of Highmore in which the disease was still

local clinical healing for periods ranging from one to eight years was obtained in five. In twenty three far advanced cases with metastases only palliation was obtained

Of eight patients treated for adamantinoma four have been clinically well for periods up to seven and a half years

In all but one of the cases of tumors of the larynx, œsophagus and branchiogenic remains only palliation lasting for from six to eight months was obtained. In the one exception a case of epithelioma of the larynx, the palliation has lasted for four years

Four of eight patients treated for early epithelioma of the vagina and two of twenty five with far advanced vaginal epithelioma have been clinically well for periods up to three years

Of the cases of epithelioma of the cervix, clinical healing was obtained in 93 per cent of those of Group 1, 56 per cent of those of Group 2 and 27 per cent of those of Group 3. In the case of Group 4 palliation lasting for from six months to four years was obtained

Of seven cases of early adenocarcinoma of the cervical canal clinical healing for periods ranging up to four years was obtained in four. In the more advanced cases only palliation resulted

Cancer of the fundus of the uterus was clinically cured for periods ranging up to three and a half years in about 75 per cent of the operable cases. In cases of recurrence following incomplete operation or due to technical difficulties at the time of operation the treatment yielded a clinical healing lasting up to three years in about 32 per cent of the cases. In the inoperable cases only palliation lasting for from six months to three years was obtained

In the thirty two far advanced cases of cancer of the ovary no clinical healing was obtained but in several there was palliation lasting up to two and a half years

Of the 184 cases of cancer of the rectum and anal ring healing for from eight months to four years was obtained in eleven

In the sixty five cases of cancer of the bladder an absolute clinical cure lasting for more than two years was obtained in only one but in the others the treatment resulted in palliation

In carcinoma of the prostate only palliation was obtained

Of fourteen cases of cancer of the thyroid palliation lasting for three and five years respectively was obtained in two

In inoperable cancer of the stomach palliation lasting for from six months to two years and four months was obtained

In early cancer of the breast the treatment of choice at the present time is operation followed by divided doses of high voltage roentgen rays

In the cases of mixed embryonic tumors of the kidney the results were unfavorable but in two cases of hypernephroma palliation lasting for two and three years was obtained. One patient treated for

adenocarcinoma of the kidney recurring after operation was clinically cured for almost two years by the use of high voltage X rays

Of the forty one patients treated for endothelioma and mixed tumor, eleven have been clinically well for periods ranging from six months to five years

Of twenty two patients with testicular sarcoma, two have been clinically well for a year following surgery and irradiation and three have had palliation for two years

No cases of Hodgkin's disease have been cured, but palliation has been obtained in all of the forty six cases and in one instance this has persisted for five years

In myelogenous and lymphatic leukaemia, irradiation has proved very satisfactory in bringing about remissions, but the palliation has been of relatively short duration

Irradiation and arsenic medication yielded apparently a clinical cure lasting for periods up to six and a half years in thirteen of thirty eight cases of round cell sarcoma in which the disease was local or has formed only regional metastases. In the further advanced cases—cases of so called sarcomatosis—only palliation was obtained

In sarcoma of the giant cell, spindle cell, and melanotic types, irradiation has proved of great value

#### GENERAL BACTERIAL, PROTOZOAN, AND PARASITIC INFECTIONS

Ashhurst, A P C The Prognosis of Tetanus  
*J Am M Ass* 1926 lxxvii 2039

Ashhurst is a firm believer in the efficacy of intraspinal injections of tetanus antitoxin if they are given early. Antitoxin given intraspinaly has a specific action on the toxin already in the spinal nerve roots and in the spinal cord. In experiments on rabbits it was found that intraspinal subarachnoid injections of a solution of methylene blue resulted in a staining of the cord and the base of the brain as far as the anterior ends of the optic tracts and even stained the cerebrum in patches. Therefore it is reasonable to suppose that tetanus antitoxin injected into the lumbar subdural space will reach all parts of the spinal cord

Recoveries from tetanus without the administration of antitoxin by the spinal route are exceedingly few. Deaths occurring when this treatment is given promptly are also very few. Therefore to refuse to employ antitoxin by the intraspinal route is unjustifiable. The diagnosis of tetanus must be made early and the treatment must be very prompt

The aims of treatment should be (1) to prevent the further absorption of toxin by abolishing its source the infected wound (2) to neutralize the toxin which is being absorbed by the immediate administration of from 15,000 to 20,000 units of antitoxin intravenously (3) to neutralize that which has been absorbed into the spinal cord by the immediate intraspinal injection of from 6,000 to

10,000 units, (4) to administer enough spinal depressants, preferably chloral and bromides by mouth and by rectum, to exert a physiological effect, and (5) to keep the patient alive by feeding and nursing. All of the antitoxin needed should be given as nearly as possible at one time and as soon after the diagnosis is made as possible. In most cases repeated doses of antitoxin are a waste of a valuable and very expensive remedy.

ANTHONY F. SAYRE, M.D.

Serigós E. Proximal Hydatid Intradermal Reaction. A New Method of Obtaining More Sensitive Reactions (Intradermorreaccion hidatica proximal nueva procedimiento que permite obtener reacciones más sensibles.) *Semana med*, 1916, xxxiii 1374

In a case of hydatid of the liver, the author by chance made an intradermal injection immediately over the cyst and obtained a very intense reaction. He therefore tested to see whether the reaction is constantly more intense near the cyst. He found that when two injections were made there was always a more intense reaction at the site of the proximal injection than at that of the distal injection. He made the proximal injection over the cyst and the distal one on the inner surface of the thigh or on the forearm. The distal reaction may be entirely negative and the proximal reaction positive. The cyst may be located by inspection or by percussion and roentgen examination.

A cyst of the lung may be localized approximately by making an anterior, a posterior, and a lateral injection and judging the nearness of the cyst from the intensity of the reactions. A similar method may be used for cysts of the brain, one injection being made in the mastoid region and one in the forehead. A negative reaction with the injections made at the usual sites is very persistent in hydatid cyst of the central nervous system.

AUDREY G. MORGAN, M.D.

#### EXPERIMENTAL SURGERY

Haden R L Lesions in Rabbits Following the Intravenous Injection of Bacteria from Chronic Periapical Dental Infection. *Am J M Sc* 1916, clxxx 885

Haden reports a study of the lesions in 1500 rabbits following the intravenous injection of bacteria from chronic dental infections.

Joint involvement occurred in 865 animals. This consisted in distention of the joint capsule by purulent fluid or multiple hemorrhages in the synovial membrane and joint capsule.

Kidney lesions occurred in 453 animals. The most common condition was pyelonephritis. Multiple cortical abscesses, acute hemorrhagic nephritis, subacute parenchymatous nephritis, hemorrhage into the medulla, and perinephric abscess were also found.

Gross muscle involvement was noted in 315 animals. The lesions appeared as small white streaks



These were most distinct in recently killed animals and most common in the muscles of the extremities. Sections showed necrosis of the muscle fibers without marked cellular infiltration. Gross hemorrhages into the muscles were occasionally seen.

Heart lesions occurred in 353 animals. The valvular lesions were almost entirely vegetations. The myocardial lesions consisted of discrete hemorrhages or short white streaks of necrosis. Often there was an excess of pericardial fluid. Occasionally purulent pericarditis was found.

Lesions of the stomach or duodenum were found in 234 cases. The stomach lesions nearly always showed hemorrhage with ulceration or erosion. The hemorrhage in the duodenum was not associated with ulceration.

Gross eye lesions occurred in 204 cases. The most common lesion was an iritis or an iridocyclitis. Multiple hemorrhages in the iris, limbus and sclera, cloudy fluid in the anterior chamber and cloudy

cornea also occurred. Pericorneal injection often developed a few hours after the inoculation.

Sixty-two animals showed gross brain lesions. The most common condition was a basilar meningitis. Occasionally multiple cortical abscesses were seen. In rare instances hemorrhages were found in the cord or sciatic nerve.

Acute splenic tumor was common. Occasionally a splenic infarct was found. Acute cholecystitis was observed in one animal. Tenosynovitis, lymphadenitis, onychia, thyroiditis, hemorrhagic colitis and hemorrhages into the skin were also seen.

This incidence of lesions in animals after the intravenous injection of bacteria agrees quite closely with the lesions due to chronic focal infection observed in man.

Organisms recovered from roentgenographically negative teeth were found to be as pathogenic as cultures taken from roentgenographically positive teeth.

SAMUEL KAHN, M.D.

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NOTE.—THE BOLD FACE FIGURES IN BRACKETS AT THE RIGHT OF A REFERENCE INDICATE THE PAGE OF THIS ISSUE ON WHICH AN ABSTRACT OF THE ARTICLE REFERRED TO MAY BE FOUND

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